



Business Connectivity Market Review

Review of the retail leased lines, wholesale
symmetric broadband origination and wholesale trunk
segments markets

Statement
and
Consultation

Publication date: 8 December 2008

Closing Date for Responses: 13 January 2009

Contents

Section		Page
1	Summary	3
2	Introduction	13
3	Retail product market definition	24
4	Retail geographic market definition	52
5	Wholesale product market definition	56
6	Wholesale geographic market definition	89
7	SMP assessment	143
8	Regulatory remedies and impact assessment	180
Annex		Page
1	Responding to this consultation	309
2	Ofcom's consultation principles	311
3	Consultation response cover sheet	312
4	Consultation question	314
5	List of respondents to the July 2008 consultation	315
6	Geographic analysis	316
7	Aggregation nodes and geographic trunk analysis	330
8	SMP Conditions and Directions	364
9	Reassurance letters and voluntary undertakings	519
10	Notification in relation to the market for high bandwidth AISBO in the Hull area	520
11	Glossary	522

Section 1

Summary

Introduction

- 1.1 This Statement sets out the main conclusions of our review of the retail and wholesale markets for leased lines in the UK. The present review supersedes the Leased Lines Market Review carried out by Ofcom in 2003/04 (the 2003/04 Review), the findings of which were set out in a statement published in June 2004¹.
- 1.2 Leased lines, or private circuits as they are also known, provide dedicated transmission capacity between customer sites, which can be used to carry voice, data and video traffic. Leased lines fall into two broad categories, namely Traditional Interface (TI)² and Alternative Interface (AI)³. A further distinction is frequently drawn between the trunk and terminating segments of a wholesale leased line, the former being the long distance component of the circuit and the latter being the segments at each end of the circuit which connect to the customer site.
- 1.3 At the retail level, sales of leased lines are worth about £1 billion a year. They are used by businesses and public sector organisations to build their own communications networks, which in turn play an increasingly important role in the overall functioning of the UK economy. At the wholesale level, leased lines are purchased by other Communications Providers (CPs) and are used as inputs into a wide range of downstream services, including broadband and mobile services, and business connectivity services such as virtual private networks, as well as retail leased lines.
- 1.4 The preliminary findings of our review were set out in a consultation document published in January 2008 entitled *Business Connectivity Market Review, Review of the retail leased lines, wholesale symmetric broadband and wholesale trunk segments*⁴ (the January 2008 consultation). Having considered the responses to the January 2008 consultation, we published a further consultation document in July 2008 entitled *Business Connectivity Market Review, Review of the wholesale very high bandwidth symmetric broadband origination markets*⁵ (the July 2008 consultation) where we set out a set of revised proposals for some of the wholesale leased lines markets.
- 1.5 We have now reached a conclusion on nearly all of the markets considered in the review. The exception is the wholesale market for the high bandwidth AI circuits in Hull, where we have amended our previous proposal in the light of some recently received information. For this market alone, we are consulting on a new proposal, which is that no CP has significant market power (SMP) in the market, and that no ex ante regulation should therefore apply.

¹ <http://www.ofcom.org.uk/consult/condocs/llmr/statement/>

² TI circuits include analogue circuits and digital circuits that use Synchronous Digital Hierarchy (SDH) or Pleisynchronous Digital Hierarchy (PDH) transmission.

³ AI circuits are digital circuits which use other forms of transmission, generally Ethernet.

⁴ <http://www.ofcom.org.uk/consult/condocs/bcmr/>

⁵ http://www.ofcom.org.uk/consult/condocs/bcmr_tisbo/

- 1.6 In reaching our conclusions, we have looked for opportunities to deregulate where markets conditions warrant it, in line with our statutory obligation to ease the burden of regulation. With this objective in mind, we have, for example, deregulated the markets for low and high bandwidth TI terminating segments in the Central and East London Area, and the market for high bandwidth AI terminating segments in the UK excluding Hull. On the other hand, we have proposed additional regulatory obligations where required to protect consumer interests and promote effective competition. To this end we have, in particular, proposed extending the scope of charge controls to include trunk segments and low bandwidth AI terminating segments.
- 1.7 This review has been carried out in accordance with the requirements of the European regulatory framework and the Communications Act 2003. Full account has also been taken of the European Commission's (the Commission) relevant guidelines and recommendations and the relevant guidelines produced by the European Regulators' Group.

The 2003/04 review and the current regulatory obligations

- 1.8 The 2003/04 Review focused on the retail market for low bandwidth TI leased lines, the wholesale markets for low and high bandwidth TI terminating segments and the wholesale market for AI circuits at all bandwidths. In each of these markets, Kingston Communications ('KCOM') was found to have SMP in the Hull area, and BT was found to have SMP in the rest of the UK. BT was also found to have SMP in the UK market for trunk segments. Based on these findings, a number of SMP obligations were imposed on BT and KCOM, including obligations to supply, requirements not to discriminate unduly between customers, requirements to publish terms and conditions, and in some cases price controls.

Market definitions

Retail product markets

- 1.9 The first task in a market review is to define the markets under consideration, first at the retail level and then at the wholesale level. Our retail market definitions are in many respects similar to those identified in the 2003/04 review.
- 1.10 As in 2004, we found that TI and AI leased lines continue to fall in separate markets. Although there is evidence of increasing substitution between TI and AI products, the evidence on relative pricing and patterns of demand does not suggest that the degree of substitutability is sufficient to place them in the same market. In addition, we have concluded that leased lines and Virtual Private Networks (VPNs) are in separate markets, and that the market for leased lines includes SDSL but not ADSL services. In view of their specialised nature, we do not consider Wave Division Multiplex-based retail services to be part of the market for leased lines.
- 1.11 However, we have concluded that additional bandwidth categories should be defined for very high bandwidth TI and high bandwidth AI circuits, over and above those identified in 2004. The full list of retail product markets is now as follows:
- Low bandwidth, including analogue and digital TI services at speeds up to and including 8Mbit/s;
 - High bandwidth TI services at speeds above 8Mbit/s, up to and including 45Mbit/s;

- Very high bandwidth TI services at speeds over 45Mbit/s up to and including 155Mbit/s;
- Very high bandwidth TI services, at speeds over 155Mbit/s;
- Low bandwidth AI services at speeds up to and including 1Gbit/s; and
- High bandwidth AI services at speeds over 1Gbit/s.

Retail geographic markets

- 1.12 Our analytical framework for assessing the geographic extent of markets focuses, in particular, on geographic variations in competitive conditions and the presence of common pricing constraints.
- 1.13 We consider that, as in 2004, a local geographic market exists in the Hull area for retail leased lines and that there is a national retail market for low bandwidth TI services, covering the rest of the UK. We have not reached definitive conclusions on the geographic scope of the other retail markets for leased lines, as this market review is primarily concerned with assessing competition in wholesale markets.

Wholesale product markets

- 1.14 To a large extent, our findings in relation to wholesale product markets reflect those for retail product markets, as summarised above. In addition we have concluded that:
- Combined markets exist for wholesale access and backhaul products, as in general CPs are likely to continue to purchase access and backhaul together. These markets are referred to as TI Symmetric Broadband Origination (TISBO) and AI Symmetric Broadband Origination (AISBO);
 - Unbundled Local Loop (LLU) and Radio Base Station (RBS) backhaul circuits fall within the related AISBO and TISBO markets respectively; and
 - There is a separate market for SDH/PDH trunk segments but that a separate market for Ethernet trunk is unlikely to emerge until the roll-out of carrier class Ethernet.

Wholesale geographic markets

- 1.15 As in the case of retail markets, we have concluded that separate geographic markets for wholesale leased lines exist in the Hull area. In the rest of the UK, we have found the markets to be national in scope, with two exceptions. The exceptions relate to the markets for high bandwidth 34/45Mbit/s and very high bandwidth 155Mbit/s TISBOs. In these cases, we have found that separate geographic markets exist in a newly defined Central and East London Area (CELA), and the rest of the UK (excluding Hull). The CELA corresponds broadly to the London congestion charging zone and Docklands.
- 1.16 We have defined the market for TI trunk segments on the basis of a list of 46 “aggregation nodes”, which correspond to major population and business centres. For AI circuits, the geographic boundary of the market for terminating segments has been defined with reference to 56 aggregation nodes, corresponding to locations at which other communications providers (OCPs) are likely to interconnect as BT rolls out its 21st Century network.

SMP analysis

1.17 Having defined the relevant markets, the second task in a market review is to consider whether any provider has SMP. Our findings for the various markets are set out below.

Markets outside the Hull area

Retail market for low bandwidth TI leased lines

1.18 We have concluded BT has SMP in this market. In reaching this view, we have been influenced by a range of factors, including the following:

- BT's high market share (80% by volume in 2006);
- BT's apparent high profitability and high pricing of these services;
- BT's control of infrastructure which is not easily duplicated; and
- BT's ability to exploit economies of scale and scope.

1.19 We consider that the impediments to competition largely arise as a result of upstream bottlenecks. BT's retail services are not yet replicable by BT's competitors, because of the deficiencies in BT's wholesale products identified in our Replicability Statement of April 2006⁶. BT has recently made further submissions to us in respect of replicability and we expect to publish a further consultation on this issue in the early part of 2009.

1.20 At some point in the future, after our replicability concerns have been fully addressed, it may be possible to deregulate this market. However, it cannot be assumed that improvements in the effectiveness of upstream remedies will deal with all the competition concerns in the downstream market immediately – it is likely to take some time for them to feed through to effective competition at the retail level. We therefore consider that BT is likely to retain SMP for the duration of this market review. We will, however, monitor developments in the market and initiate a further review if the evidence suggests that is warranted.

Wholesale market for low bandwidth TISBOs

1.21 We have concluded that BT has SMP in this market, for reasons which are similar to those which apply in the associated retail market. BT has had a persistently large share of the market (89% by volume in 2006) and has a ubiquitous national network which is not easily duplicated. The market is characterised by high sunk costs and significant economies of scale and scope, which act as barriers to market entry and expansion. Our view is that the characteristics of this market, and BT's position within it, are unlikely to change markedly during the four year period considered in this review.

Wholesale market for high bandwidth TISBOs in the UK excluding excluding the CELA

⁶ <http://www.ofcom.org.uk/consult/condocs/busretail/statement/statement.pdf>

- 1.22 We consider that BT has SMP in this market, for broadly similar reasons to those which apply in the low bandwidth market. OCPs have informed us that it is not economical for them to expand beyond their current size in this market. New network build is generally only economical if very short lines are required and if there are no other impediments to competition (e.g. the need to obtain way-leaves).
- 1.23 BT's dominant position in this market is reflected in its BT's persistently high market share (45 per cent in 2006). There is no evidence to suggest that this market is prospectively competitive, in part because our discussions with the operators that acquire these services indicate that this market is unlikely to grow in the future. This is likely to prevent BT's wholesale competitors expanding to a scale where they can operate as efficiently as BT.

Wholesale market for very high bandwidth 155Mbit/s TISBOs in the UK excluding the CELA

- 1.24 We have concluded that BT has SMP in this market, for reasons similar to those which apply in low and high bandwidth markets. We have also taken account of the responses to the January 2008 consultation, in which several OCPs including Mobile Network Operators (MNOs) argued that 155 Mbit/s TISBOs are only supplied in competitive conditions in some metropolitan areas, and that in the rest of the UK there is no realistic alternative to BT.

Wholesale markets for high bandwidth TISBOs and very high bandwidth 155Mbit/s TISBOs in the CELA

- 1.25 We have found that no company has SMP in these two CELA markets and that these markets are effectively competitive.
- 1.26 Colt has the largest share of these markets, with 46% of high bandwidth circuits and 55% of very high bandwidth 155Mbit/s circuits in 2006. However, we do not consider that Colt has SMP in these markets. In reaching this view, we have taken account of the following factors:
- When compared to BT, Colt can be regarded as a new entrant, having built the first part of its network in London in 1993. Colt's position has been built up by competing against BT and others, and is not the result of it having significant advantages in terms of infrastructure that is not easily duplicated. Colt's success in the market illustrates the fact that the high customer density in the London area makes entry easier than in the rest of the UK; and
 - There are a number of companies which have extensive networks in the CELA, including Cable & Wireless and another CP, as well as Colt and BT. The CELA has been defined such that there are at least three network operators within 200m of large business sites within each postal sector. As a result, it is unlikely that any one of these operators will have significant cost advantages over the other operators through having control of infrastructure.

Wholesale market for very high bandwidth TISBOs, at speeds over 155Mbit/s

- 1.27 We consider this market to be effectively competitive. While we recognise that competitive conditions may vary across the UK, it is likely that demand for 622 Mbit/s circuits will be concentrated in areas where other CPs can compete with BT. Given

BT's low market share, and the low level of concentration in this market, we think it unlikely that the position will change materially within the timeframe of this review

Wholesale market for low bandwidth AISBOs

- 1.28 We have concluded that BT has SMP in the low bandwidth AISBO market outside the Hull area. This conclusion is based primarily on BT's persistently high market share (73% by volume in 2006); the high profitability of the relevant services (around 30% Return on Capital Employed in 2007/08); the advantages enjoyed by BT due to its much more extensive network infrastructure; and the barriers to entry and expansion in this market, which are associated with high sunk costs and the availability of economies of scale and scope.

Wholesale market for high bandwidth AISBOs

- 1.29 We do not consider that BT, or any other operator, has SMP in this market. While still relatively high at around 38% to 40%, BT's market share has been falling and there is no evidence to indicate that this trend will reverse in the near future. In addition, there has been significant entry in the market in the recent past, and we are aware of likely future entry. The evidence suggests that the very high revenues that can be earned from these circuits mean that CPs are generally willing to sink the high fixed costs required to provide them.
- 1.30 We recognise that this market is continuing to develop and that demand is likely to increase over the period of the market review. However, we do not have any evidence which suggests that this demand is likely to grow markedly outside geographic areas with a concentration of large business sites. On this basis, we conclude that there is no operator with SMP in this market. We intend, however, to keep developments in this market under review and will carry out a further review if the evidence indicates that is warranted.

The UK market for wholesale TI trunk segments

- 1.31 We conclude that BT has SMP in this market, for reasons similar to those which apply in other wholesale markets. In particular, BT has a persistently high market share, estimated to be in the range of 58% to 86% in 2006, and the profitability of BT's trunk services has been high in recent years. Following a recent restatement, the ROCE on these services was 45% in 2006/07 and 67% in 2007/08, well above the 11.4% cost of capital estimated for BT in 2005⁷.
- 1.32 We consider that the SMP that presently characterises the market is likely to remain for the period considered by this review. We have not been able to identify any developments that would reduce the high structural barriers to entry and expansion that characterise the market, or which would generate sufficient competitive pressure within the relevant timeframe to alter the current finding of SMP.

Markets in the Hull area

- 1.33 We have concluded that KCOM has SMP in the following markets in the Hull area:

⁷ See Ofcom's August 2005 statement *Ofcom approach to risk assessment in the cost of capital*. Also see Current Cost Financial Statements for 2007 including Openreach Undertakings, pages 70 and 71, "applicable rate of return on capital" column for TI and AISBO services. See:

<http://www.btplc.com/Thegroup/Regulatoryinformation/Financialstatements/2007/CurrentCostFinancialStatements.pdf>

- The wholesale market for low bandwidth TISBOs;
- The wholesale market for high bandwidth TISBOs;
- The wholesale market for very high bandwidth 155Mbit/s TISBOs; and
- The wholesale market for low bandwidth AISBOs.

1.34 These findings are based primarily on:

- KCOM's high market shares, which range from at least 51% in the low bandwidth TISBO market to 98% in the very high bandwidth 155Mbit/s TISBO market;
- The ubiquity of KCOM's infrastructure and the fact that it is not easily duplicated;
- KCOM's ability to exploit economies of scale and scope; and
- The existence of significant barriers to entry and expansion, including as a result of sunk costs.

1.35 We have not identified any developments that would serve to reduce the high barriers to entry that characterise these markets and therefore consider that the factors giving rise to SMP are likely to continue to apply over the period considered by this review.

1.36 On the other hand, we have concluded that KCOM no longer has SMP in the market for retail low bandwidth TI leased lines in the Hull area. In addition, we have found that no company has SMP in the wholesale market for very high bandwidth TISBOs at speeds over 155Mbit/s. There are currently no circuits of this kind in the Hull area.

1.37 In the January 2008 consultation, we set out our preliminary view that KCOM had SMP in the wholesale market for high bandwidth AISBOs. However, it has since become apparent that there are no high bandwidth AISBO circuits in Hull. We are therefore proposing to amend our finding in this market, and are now proposing that no company has SMP. We would welcome stakeholders' views on this provisional conclusion.

Remedies

1.38 The third and final task in a market review is to impose appropriate regulatory obligations on those found to have SMP. The purpose of those obligations is to ensure that the SMP operators do not exploit their market power to the detriment of consumers, and to promote fair and effective competition, both in downstream markets and where feasible in the markets concerned.

1.39 We have decided to impose a range of obligations on BT and KCOM in the markets in which they have been found to have SMP. While the obligations are in many respects similar to those imposed following the 2003/04 Review, there are a number of significant changes, including:

- The proposed extension of charge controls to cover low bandwidth AISBO and TI trunk services, in addition to low and high bandwidth TISBOs. In proposing a charge control for low bandwidth AISBO services, we have taken account of the fact that this is now a mature market, in which BT has a position of persistent dominance and is earning high returns. BT's returns in the trunk market have

also been high and, contrary to our expectations at the time of the 2003/04 review, this market has not become increasingly competitive over time;

- Voluntary undertakings provided by BT in relation to the supply and pricing of analogue and sub-2Mbit/s retail circuits; and
- A voluntary undertaking from KCOM in respect of the pricing of its TISBO services.

1.40 The full list of SMP obligations is set out below.

Markets outside the Hull area – SMP conditions on BT

Retail analogue and low bandwidth digital TI leased lines

1.41 BT shall be subject to the following obligations in this market:

- **Obligation to provide:** BT should be required to supply existing and new 2 Mbit/s retail low bandwidth leased lines to third parties on reasonable request. The supply of analogue and low bandwidth digital circuits up to 2 Mbit/s will be addressed through a voluntary undertaking, as referred to below;
- **No undue discrimination:** For all analogue and digital services at speeds up to and including 8 Mbit/s, a requirement not to unduly discriminate; and
- **Obligation to publish a reference offer:** For all analogue and digital services of speed up to and including 2 Mbit/s, a requirement to publish prices, terms and conditions, and to notify on the same day of entering into force any changes to those prices terms and conditions.

1.42 In addition, we have also accepted the following voluntary undertakings from BT⁸:

- that it will continue to supply new analogue retail circuits until 1 January 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying platform is closed at an earlier date;
- that it will continue to supply new sub-2Mbit/s retail circuits until 1 January 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying wholesale products are withdrawn from new supply at an earlier date;
- that it will not increase its prices for analogue services more quickly than the rate of inflation (RPI-0%) for a period two years following the publication of the Business Connectivity Market Review Statement i.e. from 2008 to 2010; and
- that it will commit to a further two-year cap, the level of which would be agreed with Ofcom prior to 2011.

1.43 If BT fails to adhere to its pricing commitment, or if BT and Ofcom should fail to reach agreement on the two-year cap for 2011-12, a cost orientation condition in relation to the price of analogue services would then come into effect.

⁸ The letter setting out these undertakings is reproduced in Annex 9.

Wholesale markets for low bandwidth TISBOs, high bandwidth TISBOs in the UK excluding the CELA, very high bandwidth 155Mbit/s TISBOs in the UK excluding the CELA, wholesale low bandwidth AISBOs and Wholesale TI trunk segments

1.44 BT shall be subject to the following obligations in these markets:

- an obligation to provide Network Access;
- a requirement not to unduly discriminate;
- an obligation to ensure that charges are reasonably derived from the costs of provision;
- requirement to publish a reference offer;
- an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
- an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
- a requirement to publish quality of service information;
- a requirement to notify technical information with 90 days notice; and
- obligations relating to requests for new network access.

1.45 In addition, in the wholesale market for low bandwidth AISBO, BT will be subject to a Direction in relation to Service Level Guarantees (SLGs), which re-imposes under the new SMP Conditions the SLG Direction set out in Ofcom's SLG Statement published on 20 March 2008⁹.

1.46 In the wholesale TISBO and trunk segments markets where BT has been found to have SMP, BT will be subject to a Direction under the general access condition to provide Partial Private Circuits (PPCs) and Radio Base Station backhaul (RBS backhaul).

1.47 In all wholesale markets where it has been found to have SMP, BT will be obliged to provide certain interconnection and accommodation products which will be subject to the remedies set out above in relation to each of these markets.

Markets in the Hull area – SMP conditions on KCOM

Wholesale low, high and very high bandwidth 155 Mbit/s TISBO

1.48 The following regulatory obligations shall apply to KCOM in these markets:

- a requirement to provide network access on reasonable request;
- a requirement not to unduly discriminate;

⁹ *Service level guarantees: incentivising performance*, 20 March 2008, <http://www.ofcom.org.uk/consult/condocs/slg/statement/>

- a requirement to publish a reference offer; and
- a requirement to notify technical information.

1.49 In addition, we have accepted KCOM's voluntary undertaking not to increase the prices of its TISBO terminating segments by more than RPI+0% for four years following the completion of this market review. If KCOM were to fail to adhere to its voluntary undertaking, it would then have to comply with a cost orientation obligation.

Next steps

Further consultation for high bandwidth AISBO market in Hull

1.50 As noted above, we are consulting in this document on the revised proposal for the wholesale high bandwidth AISBO market in Hull, and, in particular, on the revised finding that no undertaking has SMP in that market. Stakeholders have until the 13 January 2009 to send us their comments and views. We will then consider the responses received before we finalise our proposals and issue a final Statement concluding the review of the market for wholesale high bandwidth AISBOs in the Hull area.

Consultation on charge controls

1.51 As noted above, having considered all the responses received and available evidence, we have concluded that, in principle, BT should be subject to charge controls in the markets for low bandwidth, high bandwidth and very high bandwidth 155 Mbit/s TISBOs, TI trunk segments and low bandwidth AISBOs. Our charge control proposals are the subject of a separate consultation document, which is being published alongside this Statement.

Section 2

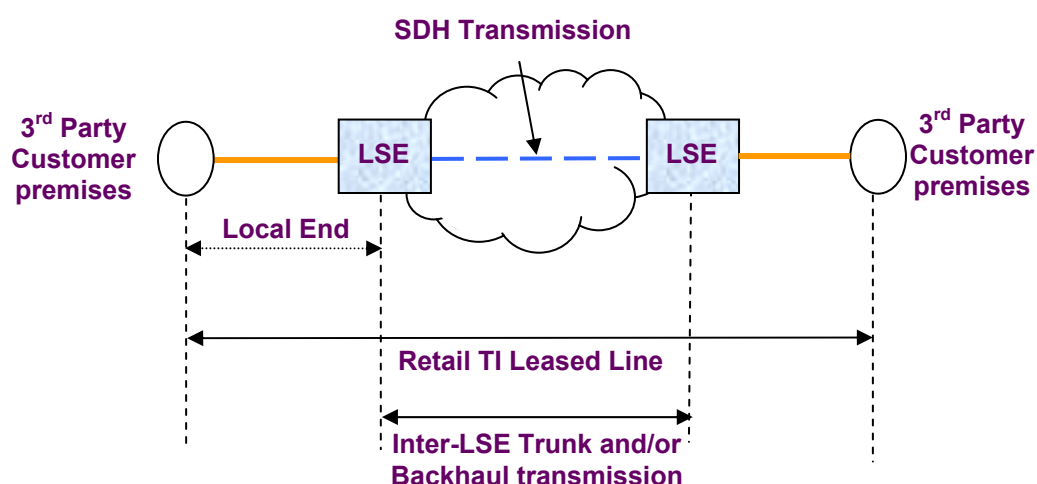
Introduction

Scope of the review

Services covered in this consultation

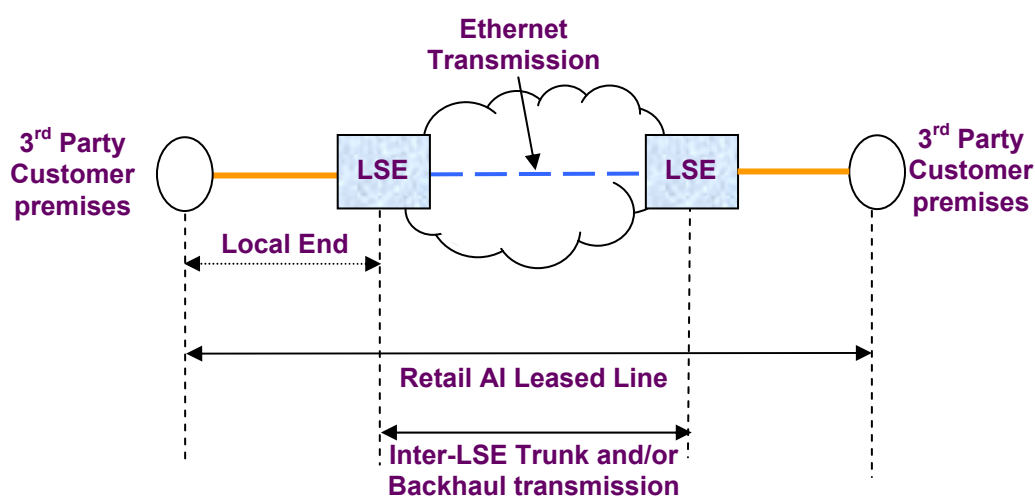
- 2.1 Leased lines, also known as private circuits, provide dedicated transmission capacity between customer sites, which can be used to carry voice and data traffic. Retail sales of these services in the UK are estimated to be worth approximately £1bn a year.
- 2.2 Wholesale leased lines are also used by Communications Providers (CPs) as inputs to their retail services. These may take the form of complete circuits connecting two or more end-user sites, or partial private circuits (PPCs) connecting customer sites to points in the purchasing CP's network. PPCs can in turn be made up of 'terminating segments', which are currently defined as running from a customer site to a Tier 1 node in BT's network, and 'trunk segments', which typically run over longer distances between Tier 1 nodes. Terminating segments are also known as Symmetric Broadband Origination services. These wholesale inputs may be used to provide retail leased lines or other retail services such as Virtual Private Networks.
- 2.3 Leased lines play an important role in business communications in the UK. They are a key building block in the communications networks on which UK businesses depend, and which are central to the effective functioning of the economy. It is therefore of considerable importance that the markets for these services operate effectively, and deliver the services which businesses require in a timely, efficient and cost-effective manner, based where possible on active competition between service providers.
- 2.4 At the retail level, retail leased lines provide businesses with dedicated symmetric transmission capacity to carry voice and/or data traffic. These lines are used to build enterprise networks linking the various company sites, and enable all types of communications within an organisation.
- 2.5 There are different types of retail leased lines. In this review we consider traditional interface (TI) and alternative interface (AI) (primarily Ethernet) leased lines, which together are by far the most common types of leased lines used by enterprises in the UK.

Figure 2.1: Retail TI Leased Line



2.6 A retail TI leased line provides dedicated symmetric transmission at a range of bandwidths between two 3rd party customer premises. The 3rd party customer premises are linked to the Local Serving Exchanges (LSE) via copper or fibre-optic pair local ends with SDH or PDH transmission being used to provide the link between the customer premises.

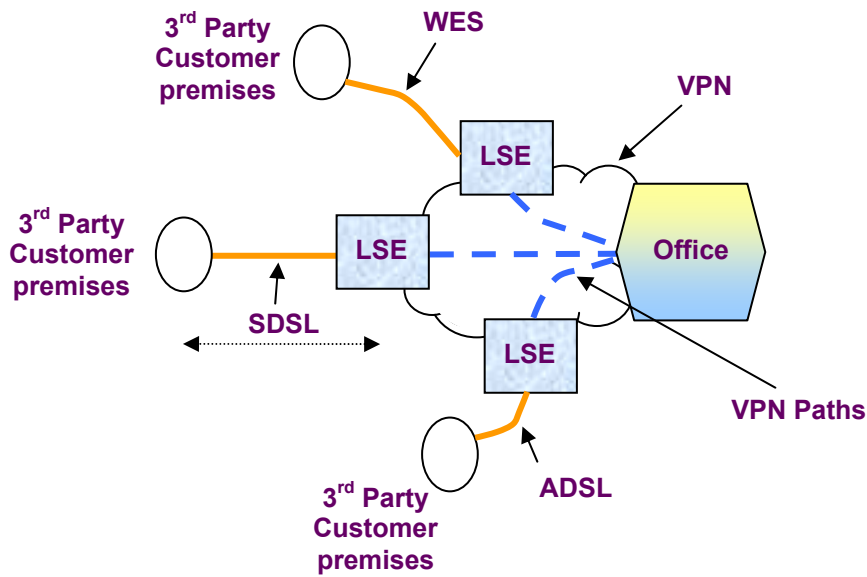
Figure 2.2: Retail AI Leased Line



2.7 A retail AI leased line also provides dedicated symmetric transmission at a range of bandwidths between two 3rd party customer premises. In this case, The 3rd party customer premises are linked to the Local Serving Exchanges (LSE) via fibre-optic pair local ends with Ethernet transmission being used to provide the link between the customer premises. These services are often provided using dedicated fibre pairs from 3rd party customer premise to 3rd party customer premise.

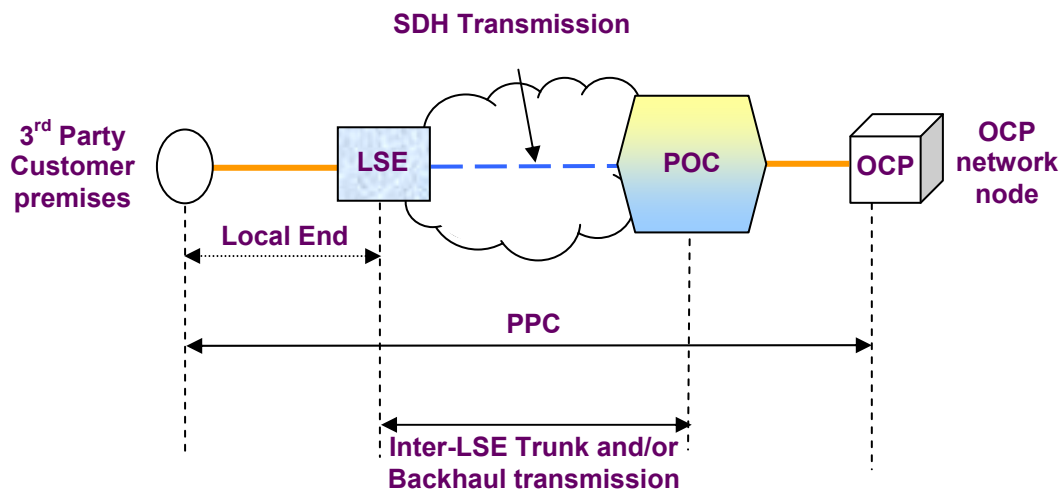
2.8 Businesses in the UK also use other types of retail business connectivity services to cater for their communications requirements. The most widely used such services are Virtual Private Networks (VPNs).

Figure 2.3: Virtual Private Network (VPN)



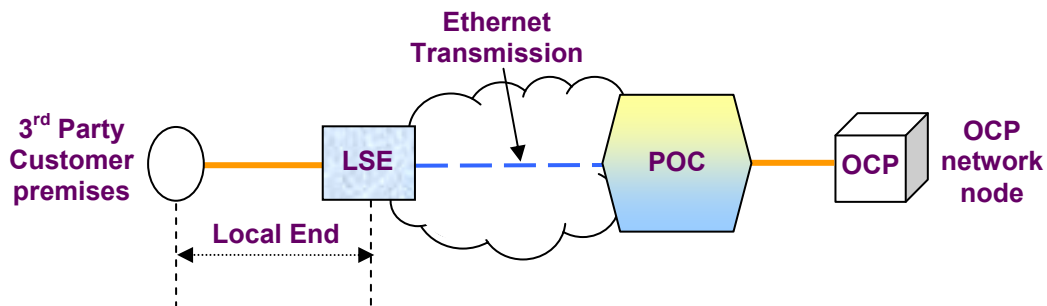
- 2.9 A VPN typically links end-user premises to a central office in order that other offices or remote workers can access applications such as company Intranet or central database applications. A range of connection types are possible that range from ADSL access via the Internet for a remote worker to dedicated leased lines for satellite offices. The VPN is configured to enable each satellite site to have secure connections of varying bandwidths to the central office.
- 2.10 These services can use some type of wholesale leased lines in the access network, but can use also other wholesale access services, such as wholesale ADSL. The core transmission typically uses virtual paths across a core infrastructure shared with other services. VPNs can be of different types, depending on the characteristics of the infrastructures used in the access and core.
- 2.11 At the wholesale level, there are a variety of services that can be used an input into downstream retail TI and AI leased lines markets.

Figure 2.4: Partial Private Circuit (PPC)



- 2.12 Partial Private Circuits (PPCs) are the most widely used wholesale leased line in the UK. PPCs provide dedicated symmetric transmission at a range of bandwidths between a 3rd party customer premise and an OCP's network via a Point of Connection (POC). The 3rd party customer premises are linked to the Local Serving Exchanges (LSE) via copper or fibre-optic pair local ends with SDH or PDH transmission being used to provide the link between the customer premises and the POC. A PPC can further be divided into a terminating segment and a trunk segments, with the latter providing connectivity between major aggregation, or trunk, nodes.
- 2.13 Increasingly important for businesses in the UK and abroad are wholesale Ethernet services. These services are available in a variety of different options, depending on whether the purchaser wishes to self provide some of the retail services using its own network, and what element it wishes to self provide.

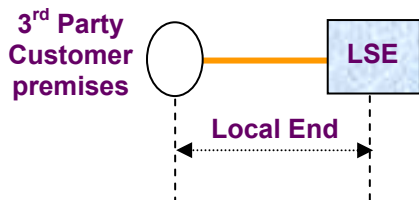
Figure 2.5: Wholesale Extension Service (WES)



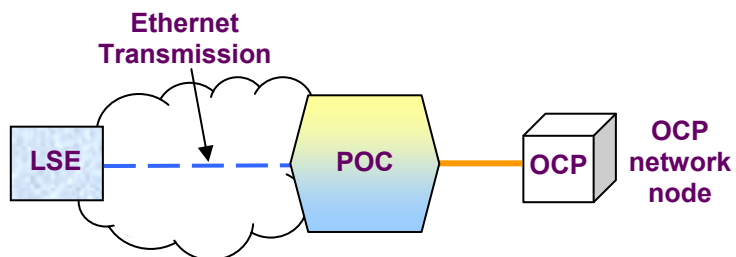
- 2.14 A Wholesale Extension Service (WES) provides dedicated symmetric transmission at a range of bandwidths between a 3rd party customer premise and an OCP's network node. The service is provided via a fibre-optic local end using Ethernet transmission and often includes transmission between the LSE and the OCP's POC provided using a dedicated fibre-optic pair.

Figure 2.6: WES Access (WES A) and WES Backhaul (WES B)

WES A

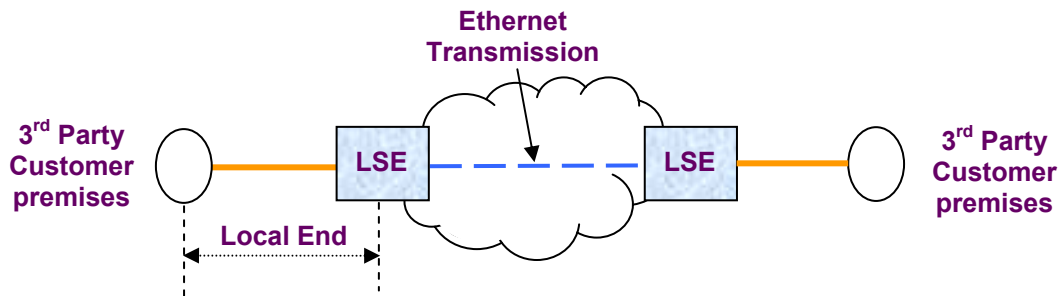


WES B



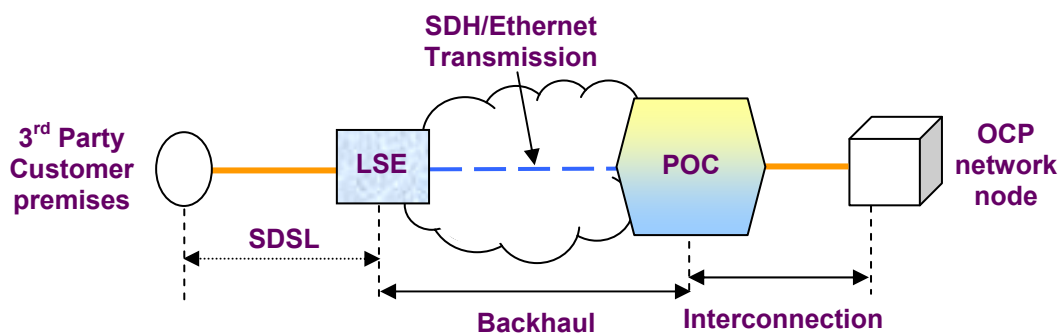
- 2.15 A WES Access (WES A) service provides dedicated symmetric transmission at a range of bandwidths between a 3rd party customer premise and a Local Serving Exchange (LSE). The service is provided via fibre-optic local ends using Ethernet transmission.
- 2.16 A WES Backhaul (WES B) service provides dedicated symmetric transmission at a range of bandwidths between a Local Serving Exchange (LSE) and an OCP's network node. The service is provided via fibre-optic local ends using Ethernet transmission.

Figure 2.7: Wholesale End to End Services (WEES)



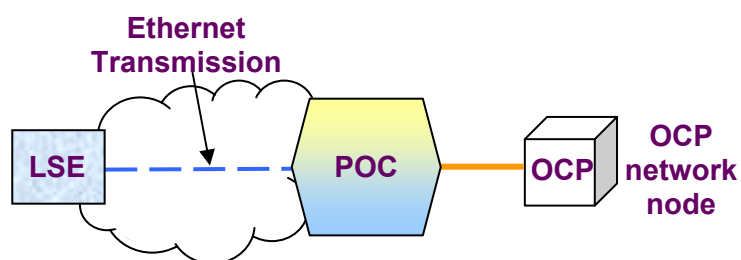
- 2.17 A Wholesale End to End Service (WEES) provides dedicated symmetric transmission at a range of bandwidths between two 3rd party customer premises. The service is provided via fibre-optic local ends and fibre-optic main link between LSEs using Ethernet transmission.

Figure 2.8: Wholesale SDSL



- 2.18 Wholesale SDSL provides symmetric transmission at a range of bandwidths between a 3rd party customer premise and an OCP's network via a Point of Connection (POC). The 3rd party customer premise is linked to the Local Serving Exchanges (LSE) via a copper pair local end with SDSL transmission being used to provide the link between the customer premise and the LSE of the customer premise and either SDH or Ethernet transmission being used to provide the link between the LSE and the CP's POC.
- 2.19 Wholesale leased lines are also used to support retail services in markets other than leased lines, due to their ability to provide a secure dedicated transmission method for data and/or voice traffic.

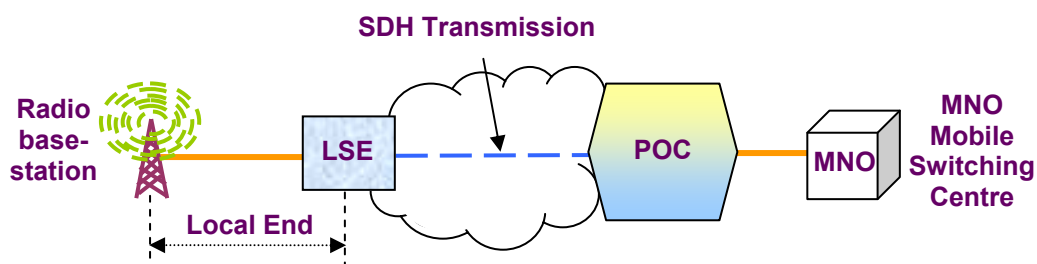
Figure 2.9: Backhaul Extension Service (BES)



2.20 A Backhaul Extension Services (BES) is a high speed, permanently connected, point-to-point data circuit between a CP and the BT exchange. This service is used by LLU operators to backhaul broadband traffic back onto their communication networks.

2.21 In addition, mobile operators in the UK use a particular wholesale leased lines product, namely Radio Base Station (RBS) Backhaul.

Figure 2.10: RBS Backhaul



2.22 An RBS backhaul circuit provides dedicated symmetric transmission at a range of bandwidths between a Mobile Network Operator's (MNO's) radio base station and the MNO's network via a Point of Connection (POC) at the MNO's Mobile Switching Centre (MSC). The base-station is linked to the Local Serving Exchanges (LSE) via copper or fibre-optic pair local ends with SDH or PDH transmission being used to provide the link between the radio base station and the POC.

Period covered by this review

2.23 In conducting this review, we have considered the level of competition and the level of regulation required to promote competition both now and on a forward looking basis. In doing so, we have taken the period for assessment as being the next four years.

The regulatory framework

2.24 The present regulatory framework for electronic communications networks and services entered into force on 25 July 2003. The framework is designed to create harmonised regulation across Europe and is aimed at reducing entry barriers and fostering prospects for effective competition to the benefit of consumers. The basis for the regulatory framework is five EU Communications Directives (together "the Directives):

- Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (Framework Directive);
 - Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive);
 - Directive 2002/20/EC on the authorisation of electronic communications networks and services (Authorisation Directive);
 - Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services , (Universal Service Directive); and
 - Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector (Privacy Directive).
- 2.25 The Framework Directive, the Access Directive, the Authorisation Directive and the Universal Service Directive were implemented in the United Kingdom on 25 July 2003 via the Communications Act 2003 (the Act). The Privacy Directive was implemented by Regulation which came into force on 11 December 2003.
- 2.26 Article 16 of the Framework Directive requires each national regulatory authority (NRA) to carry out an analysis of the relevant markets as soon as possible after the adoption of the Recommendation on relevant product and service markets or any updating thereof.
- 2.27 The Commission adopted the first edition of the Recommendation on 11 February 2003¹⁰. Ofcom carried out a review of retail leased lines, symmetric broadband origination and wholesale trunk segments in 2003/04 with the final statement published on June 2004 (the 2003/04 Review).
- 2.28 On 17 December 2007 the Commission has adopted the second edition of the Recommendation¹¹, under which some markets concerned in this review are no longer on the list of markets recommended as being susceptible to *ex ante* regulation¹². The following two relevant markets have now been removed:
- Retail market for low bandwidth leased lines; and
 - Wholesale market for trunk segments of leased lines.
- 2.29 The removal of markets from the list indicates that the Commission no longer presumes that, in principle, *ex ante* regulation is warranted for these markets. This does not mean, however, that National Regulatory Authorities (NRAs) are not in a position after an analysis of the relevant markets and a finding of SMP to impose appropriate regulatory obligations in these markets, should the national circumstances justify it. When doing so the Commission recommends that NRAs

¹⁰ Commission Recommendation 2003/311/EC of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services.

¹¹ Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (Second Edition) (C(2007)5406 rev1).

¹² See the Annex to the Recommendation.

should ensure that for those markets not on the list the following three criteria are cumulatively met:

- (i) the presence of high and non-transitory barriers to entry;
- (ii) a market structure which does not tend towards effective competition within the relevant time horizon of the market review; and
- (iii) the insufficiency of competition law alone to adequately address the market failure(s) concerned.

2.30 Whilst, as we set out in paragraph 1.39 of our January 2008 consultation, we do not believe that the passing of these the three criteria test constitutes a legal requirement for the undertaking of a market review, and where appropriate the imposition of regulatory obligations, we consider that all three criteria are cumulatively met in the case of the retail market for low bandwidth leased lines and the wholesale market for trunk segments. This is set out in the relevant parts of this statement in more detail. For the discussion around barriers of entry, please see 7.51 for the retail market and 7.170 for the wholesale trunk market. The competitive structure of both markets is analysed in 7.51 and 7.176 respectively and a discussion around the sufficiency of competition law alone can be found in 7.46 for the retail market for low bandwidth leased lines and in 7.173 for the wholesale market for trunk segments.

The market review process

2.31 Each market review is carried out in three phases:

- a definition of the relevant market or markets (with regards to the scope of both the product as well as the geographic market boundaries);
- an assessment of competition in each market, in particular whether any undertakings have SMP in a given market; and
- an assessment of the appropriate regulatory obligations which should be imposed where there has been a finding of SMP.

2.32 More detailed requirements and guidance concerning the conduct of market reviews are provided in the Directives, the Act, and in additional documents issued by the Commission, the European Regulators Group (ERG) and Independent Regulators Group (IRG). As required by the new regime, in conducting this review, Ofcom has taken the utmost account of two European Commission documents: the Recommendation and the “Guidelines on market analysis and the assessment of SMP”¹³ (the SMP Guidelines).

The SMP Guidelines

2.33 The Commission issued the SMP Guidelines in July 2002 which provide guidance on the assessment of the relevant markets and the designation that an operator has

¹³ Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03).

SMP in any given market. Oftel has produced additional guidelines on the criteria to assess effective competition based on the SMP Guidelines¹⁴.

- 2.34 Ofcom, in conducting its analysis set out in this consultation document, has taken the utmost account of both the Recommendation and the SMP Guidelines when identifying a services market and when considering whether to make a market power determination under Section 79 of the Act.

The 2003/04 review and the existing regulation

- 2.35 The 2003/04 Review found BT to have SMP in the wholesale markets for low and high bandwidth TISBO (i.e. speeds of up to and including 155 Mbit/s), AISBO at all speeds, and trunk segments. As a result of the SMP findings, a series of regulatory obligations were imposed on BT in these markets. These were:

- a general obligation to provide access on reasonable request;
- a requirement not to unduly discriminate;
- basis of charges obligations (cost orientation and a cost accounting system);
- charge controls on TISBO SMP products;
- accounting separation obligations;
- a requirement to publish a reference offer;
- an obligation to give 90 days notice of changes to prices, terms and conditions for existing TISBO services;
- an obligation to give 28 days notice of the introduction of prices, terms and conditions for new TISBO services;
- same day notification of changes to prices, terms and conditions for wholesale trunk segment products;
- a requirement to provide quality of service information;
- a requirement to notify technical information with 90 days notice; and
- obligations relating to requests for new network access.

- 2.36 BT is also currently subject to:

- a Direction under the general access condition to provide Partial Private Circuits (PPCs) at a range of bandwidths, Radio Base Station (RBS) backhaul link products, and Local Loop Unbundling (LLU) backhaul products, subject to specific terms and conditions;
- a Direction under the cost orientation condition covering pricing matters relating to PPCs and LLU backhaul;

¹⁴ see www.ofcom.org.uk/static/archive/oftel/publications/about_oftel/2002/smpg0802.htm

- a Direction under the quality of service condition to require specific information in respect of PPCs;
- a Direction under the general access condition to provide Ethernet-based LLU backhaul products, subject to specific terms and conditions; and
- a Direction under the cost orientation condition covering pricing matters relating to Ethernet-based LLU backhaul.

2.37 In addition, under the 2003/04 Review Ofcom found KCOM to have SMP in the wholesale low and high bandwidth TISBO markets (i.e. speeds up to and including 155 Mbit/s), and the AISBO market at all speeds in the Hull area. As a result, we imposed the following obligations on KCOM in these markets:

- a general obligation to provide access on reasonable request;
- a requirement not to unduly discriminate;
- cost orientation and a cost accounting system;
- requirement to publish a reference offer; and
- requirement to notify technical information with 90 days notice.

Purpose of this review

2.38 The current regulatory framework has worked well in promoting competition in some markets, but in Ofcom's view has failed to deliver improved competitive conditions in others. The pricing and quality of BT's wholesale leased lines have been a cause of concern for some time. As operators start rolling out Next Generation Networks (NGNs), it is important that the regulatory framework sets the right incentives for investments. Ofcom considers that we need to address the weaknesses to the current regime to ensure greater competition and innovation in the coming years in leased lines markets. In addition, many stakeholders have since the completion of the 2003/04 Review argued that the pace of changes in the market required a new market review. Finally, BT argued that competitive conditions have changed significantly since the last review was completed.

2.39 For these reasons, Ofcom believes it is the right time to review the current regulatory framework. To this end, we set out in the January 2008 consultation our proposals for a new regulatory framework.

2.40 During the January 2008 consultation, many respondents put forward arguments in support of a different market definition for wholesale very high bandwidth TISBO than the one proposed by Ofcom. In particular, they argued that 155 Mbit/s TISBO were in a different market from 622 Mbit/s TISBO, and that in the provision of the former, BT continued to have SMP in some parts of the country, as the only supplier of these services. They also argued for Ofcom to modify its approach to identifying geographic markets by taking into consideration a considerably shorter build distance than the one proposed by Ofcom.

2.41 After considering the respondents' views and arguments, we reviewed our market definition in the light of new evidence. We published a set of revised proposals for the

high bandwidths 155 Mbit/s and 622 Mbit/s TISBO markets in the July 2008 consultation.

- 2.42 We have now considered the responses to both consultations and have reached our conclusions as to what we believe is the appropriate market definition, SMP assessment and regulatory remedies for the leased lines markets in the UK. We consider that a package of measures that combines the January 2008 and July 2008 proposals, with some amendments to take into consideration the views of stakeholders, are the right way forward.

Outline of this document

- 2.43 The main body of this consultation document is organised as follows:

1. Summary
2. Introduction
3. Retail product market definition
4. Retail geographic market definition
5. Wholesale product market definition
6. Wholesale geographic market definition
7. SMP assessment
8. Regulatory remedies and impact assessment

- 2.44 The following Annexes are enclosed:

1. Responding to this consultation
2. Ofcom's consultation principles
3. Consultation response cover sheet
4. Consultation question
5. List of respondents to the July 2008 consultation
6. Geographic analysis
7. Aggregation nodes and geographic trunk analysis
8. SMP Conditions and directions
9. Reassurance letters and voluntary undertakings
10. Notification in relation to the market for high bandwidth AISBOs in the Hull area
11. Glossary

Section 3

Retail product market definition

Introduction

3.1 In this Section we first summarise the product market definitions set out in our January and July 2008 consultations. We then set out and respond to stakeholders' responses to these proposals before providing our conclusions in regard to the appropriate retail product market definitions.

Summary of proposals

3.2 In the January and July 2008 consultations we conducted analysis to assess the relevant retail product market definitions. Our proposed market definitions are set out in Table 3.1 below.

Table 3.1: Summary of proposed retail product market definitions in the January 2008 consultation document, as modified in the July 2008 consultation document

Retail product markets	Bandwidth breaks			
Traditional interface retail leased lines	Low Up to and including 8Mbit/s (including analogue and SDSL services)	High Above 8Mbit/s up to and including 45Mbit/s	Very High Over 45 Mbit/s and up to and including 155 Mbit/s	Very High Over 155 Mbit/s
Alternative interface leased lines	Low Up to and including 1Gbit/s		High Over 1 Gbit/s	

Ofcom's approach to market definition in the consultative documents

3.3 These proposals resulted from an application of Ofcom's standard approach to market definition, which takes utmost account of the relevant guidelines and recommendations published by the Commission. Under this approach, relevant product and geographic markets are identified by using the "hypothetical monopolist test" to identify the scope for demand- and supply-side substitution. A product is considered to constitute a separate market if a hypothetical monopoly supplier could impose a "small but significant non-transitory increase in price" (SSNIP) above the competitive level without losing sales to such a degree as to make this price rise unprofitable. If the price rise would be unprofitable, because consumers would switch to other products, or because suppliers of other products would begin to compete with the hypothetical monopolist, then the market definition should be expanded to include the substitute products.

3.4 It may sometimes be appropriate for products not linked by demand or supply-side substitution to be placed in the same market if competitive conditions in their supply are sufficiently homogeneous (although this criterion is perhaps more usually used in the context of geographic market definition as a reason for aggregating different areas not linked by demand or supply side substitution rather than in the product market context).

- 3.5 Although many of the markets this review is concerned with are wholesale markets, Ofcom first considered market definition at the retail level. This is necessary because the demand for wholesale services like those reviewed here is a derived demand and depends on the demand for the retail services which it supports. In general, where the cost of an upstream input accounts for a sufficiently large proportion of the retail price of a product, the range of available substitutes at the retail level will inform the likely range of substitutes for the wholesale service. This is because a rise in the price of a wholesale service which is passed through in the price of one retail service will cause retail customers to switch to substitute retail products, reducing demand for the wholesale input.
- 3.6 Because of the complexity of product market definition in business connectivity markets, Ofcom approached this by means of a sequence of tests to identify services which are sufficiently close substitutes for each other to be regarded as part of a single market. The sequence of tests was as follows:
1. Are analogue and digital SDH/PDH leased lines in the same market?
 2. Are traditional interface circuits in the same market as alternative interface circuits?
 3. Are Leased lines and Virtual Private Networks (VPNs) in the same market?
 4. Are leased lines in the same market as Broadband access services provided using ADSL and SDSL technologies?
 5. Are there separate markets for circuits at different bandwidths?
 6. Should Wave Division Multiplexed-based retail services be included in the markets for leased lines?
- 3.7 Ofcom's assessment of these questions took into account:
- i) The results of a survey of end users;
 - ii) Analysis of differences in relative prices and trends in usage;
 - iii) Qualitative analysis of differences in the characteristics of the services; and
 - iv) Any other relevant evidence provided to us by stakeholders.
- 3.8 A summary of this assessment follows.

1. Are analogue and digital SDH/PDH leased lines in the same market?

- 3.9 We proposed in the January 2008 consultation that analogue lines belonged to the same market as low bandwidth retail digital leased lines (see discussion at paragraphs 3.52 to 3.108 of the January 2008 consultation).
- 3.10 Our findings were predominantly based on evidence that analogue services were likely to be demand-side substitutes for low bandwidth digital leased lines. Firstly, analogue leased lines offer broadly equivalent functionality to low bandwidth digital leased lines. Secondly, our analysis of underlying costs suggested that the prices in a competitive market of analogue and low bandwidth digital leased lines were likely to be similar. Similar functionality and prices makes it likely that a SSNIP above the

competitive price level of analogue circuits would be unprofitable due to switching to low-bandwidth digital circuits and vice versa.

- 3.11 This view was supported by our end-user survey analysis which found that a relatively high number of consumers of each service claimed that they would be likely to switch to other services in response to a SSNIP (in particular the stated amount of switching tended to significantly exceed the critical loss¹⁵ for each service). This also suggests that the relevant market is wider than analogue or low bandwidth digital services alone.
- 3.12 Ofcom therefore proposed to include analogue and digital SDH/PDH in the same market because:
- The functionality of the two services is similar;
 - The underlying costs of providing analogue and digital lines are similar which in turn suggests that their prices in a competitive market would be similar; and
 - End-user research suggested that customers would be likely to switch between them in response to a SSNIP.

2. Are Traditional interface leased lines and alternative interface leased lines in the same market?

- 3.13 In the January 2008 consultation, we proposed that traditional interface (TI) leased lines belong in separate markets to AI (AI or Ethernet) services. Our analysis was set out in paragraphs 3.109 to 3.186 of the January 2008 consultation.
- 3.14 Ofcom based its proposal on an assessment of the likely extent of demand and supply-side substitution between TI and AI services. It took account of a qualitative comparison of the functionality of TI and AI services, together with an analysis of relative prices, evidence of customers' sensitivity to changes in prices from our end-user survey and an assessment of any costs associated with switching between these services.
- 3.15 We found that there were important differences in the functional capabilities of TI and Ethernet services. In addition, a comparison of relative prices and trends in purchases of these services suggested that users do not switch rapidly between the two services even in response to significant price differentials. This was supported by survey evidence and the existence of significant switching costs. This evidence suggested that AI and TI services are not sufficiently close demand-side substitutes to be regarded as part of the same market.
- 3.16 Supply-side substitution was also considered not to be relevant since most suppliers already provide both AI and TI services. This means that supply-side substitution, even if technically possible, would not provide any additional constraint on charges over and above that captured by the demand-side analysis.

¹⁵ The critical loss is the amount of switching just sufficient to render the SSNIP unprofitable.

3. Are Leased lines and VPNs in the same market?

- 3.17 In the January 2008 consultation, we proposed that VPNs belong in separate markets to leased line services (see discussion at paragraphs 3.187 to 3.255 of the January 2008 consultation). We considered this to be the case both with respect to VPNs accessed over ADSL links and VPNs provided over leased lines. Ofcom considered evidence from relative prices, a survey of end-users and an assessment of switching costs.
- 3.18 VPNs accessed via Internet links are unlikely to be substitutes to point-to-point leased line networks because they do not offer comparable levels of reliability, performance or security, all of which are of considerable importance to leased line users. Such VPNs are also considerably cheaper than leased lines. In the January 2008 consultation, we contrasted typical broadband rental charges of £20 per month and connection fees as low as £175 with a figure of £2,000 per annum or more for the “equivalent” leased line costs. We argued that, with these price savings available, if internet-VPNs were able to address the same needs as a leased line service then the majority of users would have switched to such VPN services already. The fact that significant demand for leased lines remains despite the much higher prices suggests that these VPNs do not address the same customer needs and are not close demand-side substitutes.
- 3.19 In contrast, VPNs accessed via leased lines do offer equivalent service features, but they make heavy use of leased lines as an input and involve the additional provision of a network management function. For this reason these VPNs are best characterised as a downstream service rather than as a substitute to leased lines. The fact that leased lines are a significant input to such VPNs also limits the extent to which the availability of these VPNs is able to constrain leased line prices.
- 3.20 The end user survey included a number of questions relevant to the substitutability of VPNs and leased lines. Responses suggested that a relatively high proportion of businesses without VPN services would consider switching to a VPN to avoid a 10% rise in the price of *all* the other business connectivity services that they were using. We noted that switching at the level suggested would be likely to exceed the critical loss needed to make the price rise unprofitable, which would tend to suggest a broad market definition. However, responses to other questions suggested that VPNs were less likely to be seen as a good substitute for leased lines. In the light of this, we explained that these results were best understood as an indication that end-users might be willing to switch to VPN services as part of a wider decision to replace all of their connectivity services, rather than implying that such switching behaviour would constrain a hypothetical monopolist of either an AI or TI leased line service over relatively short timeframes. Our end-user research also suggested that VPNs were often purchased alongside leased lines, rather than as a substitute for them.
- 3.21 We also identified switching costs which could inhibit substitution between VPNs and leased lines. In particular, it rarely makes sense to switch to a VPN on a link-by-link basis and migrating to a VPN therefore requires careful and costly management. VPNs are usually managed by third parties, so any decision to move to a VPN is likely to involve a more wide-ranging decision to outsource functions such as IT support, which can also involve significant changes to staff and equipment. These costs make it unlikely that customers will substitute to a VPN simply in response to a SSNIP on leased line prices.
- 3.22 Ofcom also considered that supply side substitution by VPN providers would not act as a constraint on leased line prices. This was because the sunk costs needed to

construct a network in order to provide symmetric broadband (leased line) services would be prohibitive, whilst those VPN providers who already had Ethernet or SDH/PDH networks were likely already to be supplying leased lines and as such would not represent an additional constraint over and above those identified in the demand-side analysis.

4. Are leased lines in the same market as services provided using ADSL and SDSL technologies?

- 3.23 We proposed that ADSL services belong in a separate market to leased lines and that SDSL and leased lines operate in the same market (see discussion at paragraphs 3.256 to 3.311 of the January 2008 consultation).
- 3.24 The evidence that we reviewed included an analysis of the price of these services, end-user survey results and an assessment of any differences in the functionality of the two services.
- 3.25 The evidence indicated that there were actual and perceived functional differences in leased line and ADSL services. These had narrowed since the last market review in 2004, in particular because of the improvement of overall ADSL quality and upload speeds. However, it remained the case that ADSL is generally seen as a relatively contended service, where bandwidth is not guaranteed and which is still associated with poorer service quality in terms of latency, jitter and overall throughput. The end-user research indicated that these factors, in particular reliability and availability, were critically important to leased line users.
- 3.26 Ofcom also made a comparison of relative prices and trends in purchases of ADSL and leased line services. This suggested that users do not switch rapidly between the two services even in response to significant price differentials. This suggests that ADSL and leased lines operate in separate markets.
- 3.27 In the case of SDSL, our assessment was that generally its functionality approximates that of leased lines (much more so than was the case with ADSL). As is the case with leased lines, SDSL connections offer the ability to support dedicated, i.e. uncontended, symmetric bandwidth at speeds comparable to digital leased lines (i.e. up to 2Mbit/s). Our pricing analysis also suggested that switching might be expected to occur between SDSL and leased lines in response to a SSNIP.
- 3.28 In addition, significant differences in price between even top-end ADSL and SDSL remain. For example, BT's SDSL package starts at £510 (ex VAT) per quarter whereas its highest specification 'Business Broadband' (ADSL) service is priced at £195 per quarter. Even with the caveat that current SDSL prices may be above the competitive level, the magnitude of the difference suggests that a 10% change in relative prices is unlikely to induce switching.
- 3.29 Ofcom's survey evidence suggested that symmetry may be less critical than other features of leased lines, but customer willingness to sacrifice it in response to a SSNIP was still limited. Most SDSL users stated that they would switch (if at all) to other symmetric services in response to a SSNIP on SDSL. In addition, unlike ADSL, SDSL requires an additional line for voice telephony.
- 3.30 Ofcom therefore proposed that retail leased lines and asymmetric broadband (ADSL) services are in separate markets but that symmetric broadband (SDSL) services are sufficiently close substitutes to retail leased lines for them to be part of the same (low bandwidth traditional interface) market.

5. Are there separate markets for circuits at different bandwidths?

- 3.31 In the January 2008 consultation Ofcom proposed to define three distinct markets for TI retail leased lines:
- Low bandwidth: up to and including 8Mbit/s;
 - High bandwidth: above 8Mbit/s, up to & incl. 45Mbit/s; and
 - Very high bandwidth: above 45Mbit/s.
- 3.32 We also proposed to define two distinct markets for AI retail leased lines:
- Low bandwidth: up to and including 1Gbit/s; and
 - High bandwidth: above 1Gbit/s.
- 3.33 Our analysis of these issues is set out in paragraphs 3.314 to 3.359 of the January 2008 consultation.
- 3.34 In the light of responses to the January 2008 consultation, Ofcom modified its proposal for the very high bandwidth TI market. Ofcom's revised proposals for this market were set out in the July 2008 consultation and are discussed below.
- 3.35 Ofcom's proposal to define separate markets for low, high and very high bandwidth TI circuits and high and low bandwidth AI circuits was based on the following considerations. Firstly the results of Ofcom's survey suggested that retail customers are rarely willing to compromise on bandwidth. On the other hand, Ofcom noted that there is at least the potential for demand-side substitution between lower and higher bandwidth circuits because of the functional equivalence between a high bandwidth circuit and multiple low bandwidth circuits of similar total bandwidth. However, this is not sufficient for there to be a single market, since it does not imply that either demand- or supply-side substitution would be sufficiently strong to constrain a SSNIP above the competitive price imposed by a hypothetical monopolist of either service.
- 3.36 In order to address this question, Ofcom used the market definition methodology developed for the 2004 market review. The basis of this is a consideration of the lowest cost way of meeting a particular bandwidth requirement and the extent to which this is affected by a SSNIP. If the analysis suggests that there is likely to be switching between higher and lower bandwidth circuits over a significant range of bandwidth demand, this indicates that circuits at different bandwidths form a single market due to the existence of a 'chain of substitution'. As well as price differences, the existence of this chain may depend on the proportion of customers whose total demand for bandwidth makes it likely that they would consider switching in response to a SSNIP.
- 3.37 For the purposes of the SSNIP test it is necessary to identify the competitive level of prices. In a competitive market, prices will tend towards costs, so it is appropriate to use a measure of cost as a proxy for the competitive level of retail prices. In order to address this question, we used current BT wholesale price data as a proxy for competitive retail prices and applied a 10% SSNIP to those prices. BT's wholesale prices are subject to a cost orientation obligation and, in the case of TISBO, a charge control as well.

- 3.38 The price analysis set out in the January 2008 consultation suggested that, for TI circuits, bandwidth breaks existed at around 8Mbit/s, 34/45Mbit/s and 155Mbit/s. This was because there were significant price jumps at these levels (indicating that at these levels a SSNIP applied on a bandwidth service below these levels would not prompt switching to higher bandwidth services). These results continued to apply under a range of different scenarios which we conducted to test the sensitivity of our initial results.
- 3.39 However, in the light of responses to the January 2008 consultation, Ofcom revised its proposal for the very high bandwidth TI market. Details of the revised proposals and Ofcom's reasoning were published in the July 2008 consultation and are described below, later in this Section.
- 3.40 In the case of AI leased lines, Ofcom considered the price of BT's WES service as a possible proxy. This is because BT is subject to a requirement for its WES charges to be "cost oriented". However, since BT's financial statements suggest that WES prices vary with bandwidth to a greater extent than BT's reported costs, Ofcom also considered BT's underlying costs of providing AI services, and placed most weight on the latter.
- 3.41 Whilst BT's WES prices exhibit a significant "bandwidth gradient", that is, they increase relatively sharply as bandwidth increases, the underlying costs of AI circuit provision do not. This is because the costs of duct and fibre form a high proportion of the total cost and, given the point to point dedicated circuit architecture currently used, are generally invariant with bandwidth. However, Ofcom found that the cost of the equipment which a customer needs in order to use circuits at bandwidths above 1Gbit/s (i.e. at 2.5Gbit/s and 10Gbit/s) is significantly greater than the cost of the equipment for use with circuits at bandwidths up to and including 1Gbit/s. This leads to the total costs per circuit of the high bandwidth circuits above 1Gbit/s being significantly greater than the total costs per circuit of the low bandwidth circuits, whilst total costs per circuit were relatively constant at bandwidths up to and including 1Gbit/s.
- 3.42 On the basis that it was reasonable to assume that this cost pattern would be reflected in competitive prices for AI circuits, Ofcom concluded that demand-side substitution to high bandwidth AI circuits in response to a SSNIP in the price of low bandwidth circuits would be unlikely to be sufficient to render such a SSNIP unprofitable.
- 3.43 Ofcom also considered the possibility of supply-side substitution, but found that a SSNIP in the price of low bandwidth circuits would be unlikely to attract additional entry from suppliers of high bandwidth circuits as most providers already offer services at a variety of bandwidths. Therefore Ofcom identified no additional competitive constraint from supply side substitution, over and above those already reflected in the demand-side analysis.
- 3.44 In addition, Ofcom reviewed competitive conditions across different bandwidth AI services. Ofcom found evidence of significant differences in the degree of competition between low and high bandwidth AI circuits. In particular, BT's share of the retail low bandwidth AI market was 72% whilst its share of the retail high bandwidth market was 13%.
- 3.45 Lastly, Ofcom made a forward looking assessment of foreseeable developments in the market. In particular, Ofcom recognised that the rollout by BT of its DWDM-based backhaul network (project ORCHID) could have the effect of reducing the magnitude

of the difference in the costs between low and high bandwidth circuits. This could, in principle, increase the potential for substitution between low and high bandwidth AI circuits. The evidence suggested, however, that the incremental cost of providing higher bandwidth circuits would remain sufficient to justify a continued distinction between low and high bandwidth AI markets.

- 3.46 In the light of the absence of demand or supply-side substitution and the difference in competitive conditions, Ofcom defined separate markets for low and high bandwidth retail AI circuits.

6. Should Wave Division Multiplexed-based retail services be included in the markets for leased lines?

- 3.47 We proposed that WDM-based retail services were not part of either the very high bandwidth AI or TI markets. The analysis of this question is set out in paragraphs 3.360 to 3.394 of the January 2008 consultation.

- 3.48 This view was based on the following evidence which suggested that demand-side substitution would be limited. Firstly, neither TI nor AI circuits can provide all the functionality of a WDM circuit. A particular feature of the latter is that it is possible to increase the capacity of an existing WDM circuit quickly and at low incremental cost. Secondly, there is an additional cost associated with WDM equipment. The evidence suggested that customers who need the enhanced functionality of WDM services would be willing to pay the necessary premium but that WDM circuits will be used largely by this group of customers.

- 3.49 Our view was that supply-side substitution would not constrain the price of WDM services.

- 3.50 On this basis we excluded WDM from the leased line markets which are the subject of the market review.

The revised July 2008 consultation proposals

- 3.51 In the light of responses to the January 2008 consultation, Ofcom reviewed the definition of the very high bandwidth TISBO market. We then published the July 2008 consultation in which we proposed a revised definition of the markets for very high bandwidth TI services (defined in the January 2008 consultation to comprise all 155 Mbit/s and 622 Mbit/s TI services). Ofcom now proposed to define two separate markets for the following services:

- very high bandwidth TI retail services – over 45 Mbit/s and up to and including 155 Mbit/s; and
- very high bandwidth TI retail services – over 155 Mbit/s.

- 3.52 The definition of the very high bandwidth TI retail services markets proposed in the July 2008 consultation differed from that proposed in the January 2008 consultation only in one respect, that is, the additional bandwidth break at 155Mbit/s. Other aspects of the market definition, for example the exclusion of AI circuits and ADSL and VPN services, were unchanged from January.

- 3.53 Table 3.2 sets out these proposed market definitions.

Table 3.2: Summary of proposed retail product market definitions from the July 2008 consultation

Retail product markets	Bandwidth breaks	
TI (digital) retail leased lines	Very High 155 Mbit/s Over 45 Mbit/s and up to and including 155 Mbit/s	Very High 622 Mbit/s Over 155 Mbit/s

Responses to the consultations and Ofcom's response

3.54 In the January 2008 consultation we asked the following questions in relation to our retail market analysis:

Question 1: Do stakeholders agree with our proposed retail market definition? In particular, do you agree that separate markets continue to exist for TI and AI retail leased lines?

Question 2: Do stakeholders believe that there is evidence that might support an alternative view?

3.55 In the July 2008 consultation we asked the following questions in relation to our retail market analysis:

Question 1: Do stakeholders agree with our retail market definition proposals? In particular, do you agree with our proposal to define separate product markets for TI (TI) retail leased lines - 155 Mbit/s services and TI (TI) retail leased lines - 622 Mbit/s services?

3.56 The following sub Sections summarise and respond to stakeholders' responses to these questions and also to more general objections raised in relation to our analysis of retail markets.

3.57 A number of respondents felt that we had defined an unduly narrow low bandwidth retail leased line market. However, there was no general agreement amongst stakeholders as to the correct way to define the market.

3.58 Stakeholders also raised the following specific issues:

- i) The decline in retail leased lines since the last market review suggests that these services operate in broader markets;
- ii) Ethernet operates in the same market as low bandwidth retail leased lines;
- iii) ADSL services operate in the low bandwidth retail leased line market;
- iv) 155 Mbit/s and 622 Mbit/s services operate in separate product markets; and
- v) All AI services (irrespective of bandwidth) operate in the same market.

3.59 These issues are considered below, where we also provided Ofcom's response to the issue raised.

I. Does the decline in retail leased line volumes suggest a broader product market?

- 3.60 BT raised a point regarding the decline in retail leased line volumes since the 2003/04 Review. In particular, it claimed that volumes of retail leased lines had more than halved over this period.¹⁶ In making these comparisons, BT cited the volume data set out in table B.1 of the 2003/04 Review and also the data presented in Figure 65 (Annex 5) of the January 2008 consultation.
- 3.61 BT considered that this decline supported the view that retail leased lines compete with other services such as Ethernet and ADSL.
- 3.62 We consider that the observation that some customers have migrated from leased lines to other products is not sufficient to place these other products in the leased lines market. The relevant question, for the purposes of market definition, is whether switching to these and other products would be sufficient to render unprofitable a SSNIP above the competitive price by a hypothetical monopolist of retail low bandwidth leased lines. Ofcom considered the evidence for the existence of such a constraint on leased line prices in chapter 3 of the January 2008 consultation. Switching to two of the most likely candidate substitutes, VPNs and asymmetric broadband access, is considered in detail in paragraphs 3.187 onwards and 3.256 onwards respectively. In both cases, a number of indicators are considered, including customer responses to questions about willingness to switch to other services, functionality, prices, usage patterns and switching costs and in both cases it is concluded that these products should not be considered as part of the same market as leased lines.
- 3.63 Nonetheless, we have given the issue further consideration and set out some further analysis below.
- 3.64 The evidence suggests that there has been some migration of leased line customers to services supplied using other technologies. It is likely that this will continue in future, perhaps particularly for customers who currently use the lowest bandwidth retail leased lines. Some such customers may find that their needs can be met at lower cost by an asymmetric broadband access service based on ADSL technology.
- 3.65 However, Ofcom notes that levels of prices and profits do not suggest that migration to other technical solutions, even combined with the effect of switching to alternative suppliers of similar products within the low bandwidth leased lines market, has so far had a marked effect on BT's prices or profits. It is clear from the analysis of the retail low bandwidth leased lines market set out in Ofcom's consultative document that BT's profit margins in this market remain very high without any apparent downward trend (see especially paragraphs 7.65 – 7.76 of the January 2008 consultation).
- 3.66 Indeed, given the differences in relative prices identified, the extent of switching away from leased lines in fact appears rather limited. The fact that there continues to be significant retail demand for low bandwidth leased lines, despite the availability of other products at often significantly lower prices, suggests that these products are

¹⁶ Specifically, BT compared the volume data set out in table B.1 of the 2003/04 LLMR and in Figure 65 (Annex Five) of the January 2008 consultation.

not sufficiently close substitutes to form part of the same market or to constrain BT's SMP.

- 3.67 Even putting this issue to one side, our view is that low bandwidth retail leased lines have not fallen to the extent claimed by BT:
- i) First, much of the apparent fall in volumes of digital leased lines cited by BT is likely to be explained by the fact that the data sets used in each market review are not directly comparable. In particular, there are various factors which limit the comparisons that can be meaningfully drawn between the volume data presented in the 2003/04 LLMR and the January 2008 consultation. As we explain below, these factors are likely to mean that the volumes reported in the 2003/04 Review overstate the 'true' number of retail leased lines that were supplied at that time, and the figures reported in the January 2008 consultation (i.e. specifically in Figure 65 of Annex 5) are likely to understate the 'true' number of leased lines that are now supplied; and
 - ii) Second, we provide information on market trends and technological developments in the retail leased lines market in the UK. These suggest that sales of low bandwidth TI digital leased lines have remained fairly constant over the period reviewed.

Data comparisons

- 3.68 As noted above, the data presented in Table B.1 of the 2003/04 Review are likely to overstate the number of 'true' retail leased lines that were supplied from 1997-2003.
- 3.69 First, BT had previously informed us that many of the circuits that were reported in the 2003/04 Review included circuits that were no longer 'active'. These were circuits that had previously been supplied at some point in time, but which customers had subsequently ceased purchasing. Many of these 'ceased' circuits continued to be included in BT's systems (particularly older circuits). For the purposes of the January 2008 consultation, BT attempted to remove all ceased circuits from the volumes data that they provided to us. Therefore, the 2008 BT data attempts to only include circuits that are revenue-generating. BT had previously informed us that for this reason the two data sets that it respectively provided under each market review are not comparable.
- 3.70 Second, the digital leased lines set out in Table B.1 of the 2003/04 Review include leased lines that were sold to wholesale providers under retail tariffs.¹⁷ This implies that Table B.1 is likely to include leased lines that should be accounted for in BT's wholesale sales. Another way of looking at this is that some leased lines in Table B.1 are double-counted i.e. whenever a leased line was supplied by BT to an OCP and then resold by that OCP as a leased line to an end user, the same leased line could appear twice in the statistics.
- 3.71 Conversely, the data presented in Figure 65 of the January 2008 consultation appears to understate the amount of retail leased lines sold. This is partly because of certain gaps in the trend data. In particular, some CPs did not provide us with useable trend data and more generally the trend data provided by CPs was

¹⁷ BT started to offer PPCs (i.e. wholesale leased lines) in the UK in August 2001 and from December 2002 price regulation of these wholesale services was put in place. Prior to this, OCPs acquired leased lines under retail tariffs (meaning that all their 'wholesale' requirements were included in the 'retail sales' set out in Table B.1). OCPs started to migrate to wholesale tariffs from 2001, although the shift was a drawn out process. This is discussed in paragraphs B. 27 - B.32 of the 2003/04 Review.

significantly less complete than the per circuit data on which we based our market share analysis. Specifically, our comparison of these two data sets indicates that the trend information is likely to understate overall volumes by up to one third.

- 3.72 Thus, the trend information in Figure 65 of the 2008 January 2008 consultation is likely to broadly present the trends across business connectivity services from 2004-06, but drawing comparisons between this trend information and that which was used in our previous review is likely to be of limited use.
- 3.73 We do not agree that the decline in retail leased line volumes means that we should define retail leased line markets more broadly.

II. Does Ethernet belong in the TI retail leased line market?

- 3.74 We have considered whether trends in the retail low bandwidth leased line market suggest that Ethernet (AI) and SDH (TI) circuits belong in the same retail market. Some indication of market trends was set out in the January 2008 consultation (see Figure 66 of Annex 5). Whilst this shows that sales of analogue lines have fallen, sales of low bandwidth TI digital leased lines remained fairly constant over the period reviewed. Volumes of digital circuits below 2Mbit/s actually increased in 2006, after falling somewhat in 2005. The number of low bandwidth Ethernet circuits increased over the period, but in 2006 remained well below the numbers of low bandwidth SDH and analogue circuits. These patterns of demand do not suggest that there is yet a general trend for Ethernet circuits to replace SDH and analogue circuits. In addition, there was only a small decline in the overall number of low bandwidth circuits (i.e. the total for all the services shown in figure 66). Our discussions with various users of leased lines indicate that the functional differences between Ethernet and TI leased lines described in paragraphs 3.119 to 3.139 of the January 2008 consultation continue to limit the extent to which they are seen as substitutes by customers.
- 3.75 BT considered that Ethernet services belong in the low bandwidth retail TI leased line market. BT provided us with internal survey evidence which it considered supported the view that Ethernet and digital leased lines are close substitutes. The survey indicates that there has been substantial new take-up of Ethernet services. In particular, the survey stated that 53% of TI customers were 'interested' in migrating to Ethernet in the next 3 years and 63% had already migrated some or all of their TI services to Ethernet. BT considered that the survey supported the view that migration was occurring in response to the perceived cost effectiveness and better service quality of carrier grade Ethernet.
- 3.76 BT also cited work by the consultants Analysys which forecast that spend on Ethernet would have a compound annual growth rate of 17% for the period 2007 to 2012.
- 3.77 Finally, BT also stated in its response that (consistent with the above reasoning) it plans to replace its legacy TI leased line platforms with an Ethernet-based service. This would be more flexible in terms of performance and price, and better suited to LAN-based connectivity than TI type services.
- 3.78 Having examined BT's survey evidence, we considered that this was likely to be less representative of the overall business market than our own end-user survey. BT's sample was relatively small (50 companies against our sample size of 450 companies). Further, the end-users interviewed appeared to be a sub-group of all business customers: the survey was restricted to companies with at least 250

employees (whereas our end-user survey also interviewed customers with a lower number of employees).

- 3.79 Despite this, we consider that BT's internal research was generally consistent with our own end-user survey, and in particular did not support our widening the product market boundaries beyond low bandwidth TI leased lines.
- 3.80 More specifically, the survey indicated that many customers had acquired Ethernet recently and many seemed to have shifted at least some of their TI lines to Ethernet lines (often while retaining TI too). Others were considering a move to Ethernet, but it was not clear that this would necessarily be a substitution away from TI leased lines (because many customers appear to be using multiple different forms of connectivity). Equally, some customers did not appear to be interested in Ethernet, and many seemed to use a large number of TI leased lines. This appeared to be because of the stability/reliability of TI relative to other services.
- 3.81 As noted above, the fact that some customers previously consuming low bandwidth TI leased lines are now purchasing Ethernet services does not necessarily mean that the two services should be placed in the same market, since it does not imply that sufficient switching would occur in response to a SSNIP to render it unprofitable. In fact the evidence from actual purchasing behaviour suggests that switching occurs relatively slowly even in response to quite large price differentials, and hence that a SSNIP is likely to be profitable. This is despite the fact that survey responses may sometimes suggest that willingness to consider switching in response to a SSNIP might be higher and even sufficient to make the SSNIP unprofitable. In the January 2008 consultation we explained that care was needed in interpreting replies to end user surveys, such as those reported in that document, in the light of all the evidence. Our interpretation is that continued migration towards AI circuits is likely but that in practice the degree of substitutability is not sufficient for the two to be regarded as part of the same market.
- 3.82 Overall, while a general theme of the survey (and the work by Analysys cited by BT) was that there was increased take-up of Ethernet and a broad sectoral shift to Ethernet, no information was provided which indicated that users of one service would switch to the other in response to a SSNIP. Moreover, some evidence was presented which indicated that Ethernet was still used together with TI services. This could suggest that currently, use of these services is to an extent complementary (although this may of course change in the future).
- 3.83 Finally, we consider BT's statements in regard to its plans to replace its legacy TI leased line platforms with an Ethernet-based service. We are aware that BT intends to replace the current separate networks which it uses to supply analogue, digital SDH and Ethernet leased lines with a single IP-based "next generation network" (NGN), which will also replace the PSTN currently used for metered services. There will be a significant period in which the new and old networks run in parallel but in the longer term, BT plans to switch off the old networks. BT's current intention is to retire its legacy SDH platform in 2014. For this to happen it will be necessary to develop "emulation" services which mean that customers who require particular functionality, for example, that associated with analogue or SDH leased lines, can obtain this from an IP-based service so that the obstacles to substitution which currently exist can be removed. In some cases, this will require technical development where it is not currently possible to meet customer requirements (for example, those of certain utility companies for precise synchronisation) using Ethernet technology. This implies that full technical substitutability is still a number of years away.

3.84 Our view is that there are separate retail markets for TI (leased line) and AI (Ethernet) services.

III. Does ADSL belong in the low bandwidth retail leased line market?

3.85 BT used similar reasoning to that used in relation to Ethernet to support its view that all ADSL services also belonged in the retail digital leased line market. BT did not rely on its end-user survey as supporting evidence. In fact, the survey suggested that these services were not substitutes: only a low proportion of respondents surveyed appeared interested in shifting to ADSL in the future.

3.86 Instead, the BT arguments were principally based on (a) the fact that volumes of leased lines are declining (particularly for 64kbit/s) and (b) take-up of ADSL is increasing, and (c) developments in VPN technology rendered previous differences between ADSL and leased lines less relevant. BT was also concerned that the data on which we relied in the January 2008 consultation (2006 data) was out of date. It presented new data which showed that:

- Demand for sub-2 Mbit/s services had declined almost 30% year on year between April 2004 and February 2008;
- SME demand for 2 Mbit/s services declined by 7.3% over April 2007 and March 2008;
- Large corporate and government customers' demand for 2 Mbit/s services declined by 3.2% over the same period.

3.87 Most OCPs advanced a more restricted version of this argument. They claimed that only 'business grade' ADSL (business broadband) belongs in the retail market with leased lines. Business broadband is defined to be an un-contended (or low contention) ADSL service, typically accompanied with high level SLAs.

3.88 The OCPs believe that business broadband offers quality akin to low bandwidth leased lines. More specifically, the OCPs stated that:

- un-contended ADSL can offer the same speeds/dedication as low bandwidth leased lines;
- Multi-Protocol Label Switching (MPLS)¹⁸ technology in the VPN core ensures that the jitter, latency and lack of security normally associated with ADSL are reduced; and
- the high level SLAs that are typically offered with business broadband services mean that the 'retail wrap' of ADSL is the same as that offered with leased lines. This means that CPs will endeavour to fix an ADSL service quickly whenever it 'goes down' and that CPs generally commit to providing high quality service to customers.

3.89 The OCPs argued that this means that we could dismiss some of the end-user research – which suggests that end users place a great deal of importance on a product's service features – as a basis for placing business broadband in a separate market to leased line services.

¹⁸ MPLS enables high priority traffic such as voice packets to be labelled so that they are routed over low latency routes.

- 3.90 Some OCPs repeated their view that business grade ADSL should be included in the market in their responses to the July 2008 consultation even though this issue was not discussed there. No new points were raised however.

Ofcom's response to whether a general quality broadband service competes in the retail leased lines market

- 3.91 In the January 2008 consultation we examined whether a general quality broadband service is likely to constrain leased lines.¹⁹ As noted above, we concluded that these two services were unlikely to be substitutes.
- 3.92 We do not consider that any new evidence has been provided which would support our overturning the views set out in the January 2008 consultation.
- 3.93 As noted above, the fact that some customers have switched away from leased lines to ADSL is not sufficient to place these other products in the same product market. The two services would only be in the same market if there is sufficient switching between ADSL and leased lines to render unprofitable a SSNIP above the competitive price by a hypothetical monopolist of retail low bandwidth leased lines.
- 3.94 Indeed, given the differences in relative prices identified between ADSL and leased lines, the extent of switching away from leased lines even over the last 12 months in fact appears rather limited. This is particularly the case with respect to 2 Mbit/s services. The fact that there continues to be significant retail demand for low bandwidth leased lines, despite the availability of other products at often significantly lower prices, suggests that these products are not sufficiently close substitutes to form part of the same market (see also discussion at paragraph 3.74).
- 3.95 The paragraphs below consider a more specific issue i.e. whether a 'business broadband' service constrains retail leased lines. The argument here is that this category of broadband offers similar service features to at least some products in that market and that these products are therefore demand-side substitutes.

Ofcom's response to whether a 'business grade' broadband service competes in the retail leased line market

- 3.96 Our Wholesale Broadband Access (WBA) Review has examined whether 'business level' broadband constitutes a separate retail market from other types of broadband used by (smaller) business and residential customers, concluding that this is not the case.²⁰ This conclusion is based on evidence which suggests that the various types of asymmetric broadband are likely to be linked on the demand-side by a chain of substitution. In addition, the full range of retail asymmetric broadband services are likely to be supply-side substitutes because the underlying wholesale platform is the same in each case and is capable of supporting a wide range of services (high contention to very low or no contention).
- 3.97 In the paragraphs below we examine whether the availability of business grade ADSL is likely to constrain the prices of retail leased lines. If so, it might be

¹⁹ Our Wholesale Broadband Access (WBA) Review has also concluded that retail leased lines are unlikely to constrain ADSL services. A comprehensive analysis of these issues is set out in the WBA review. Market definition is not always symmetric i.e. the result of a SSNIP test may differ depending on whether the starting point for the analysis is (in this case) broadband or retail leased lines.

²⁰ See pages 16 – 26 of Final Statement for WBA at:

<http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf>

appropriate to include ADSL services in the same market as low bandwidth retail leased line market services.

The quality of business broadband

- 3.98 Business grade ADSL services are more likely to be a demand-side substitute for retail leased lines the closer the quality of service they offer is to that of a leased line. Our view, however, is that business broadband does not offer the same quality of service as low bandwidth digital leased lines. The key difference between these services is that business broadband offers a substantially less reliable/predictable performance than leased lines.
- 3.99 Significantly, the relative unreliability of ADSL is inherent to this service (i.e. it is not a service feature that can be significantly remedied by providing a high quality retail service or SLA). It arises from the fact that ADSL is provided over copper and additionally (unlike SDSL services) is a service provided with as little 'noise margin' as possible.²¹ These factors make it susceptible to transient interference problems, the result of which is that performance is relatively unreliable and unpredictable. In comparison, most digital leased lines are provided either over fibre, which is inherently more robust to noise than copper²² or over bonded copper, where each individual line is operated at a much higher noise margin than DSL.²³
- 3.100 Bonded ADSL²⁴ may to some extent reduce the difference in quality and performance compared to leased lines. However, this service does not yet appear to be widely used. Moreover, much of the marketing material associated with this service states that the same guarantees that are associated with leased lines are not available over bonded ADSL. Therefore, it seems also likely that bonded ADSL is less reliable than leased lines.
- 3.101 Our view is therefore that the lower reliability of business broadband is likely to place it in a separate market to low bandwidth digital leased lines. According to the survey data set out in the January consultative document, reliability/availability is a service characteristic which 82% of end-users identified as 'business critical' and which almost all other users identified as 'very important'. No other service feature was as important to end-users. On this basis, it seems reasonable to conclude that digital leased lines and business broadband are not close demand-side substitutes.
- 3.102 It is also useful to identify other information in the end-user survey which could shed light on whether business broadband and retail leased lines are in the same market. The end-user survey did not seek to differentiate business broadband from other ADSL services, so user responses on ADSL lines do not necessarily apply to business broadband. However, most (83% of) end-users still make use of leased

²¹ Apart from physical defects in the line/equipment over which a service is provided, degraded performance is caused by increased 'bit errors'. Bit errors are usually caused by signal 'noise' i.e. disturbance which interferes with intended operations. If signal noise is sufficiently large, it erodes the noise margin (i.e. the amount of headroom the receiver has before it starts misreading the signal resulting in bit errors). This leads to bit errors, which create performance problems. Services operating with a higher noise margin are therefore less susceptible to noise problems.

²² This is because fibre is not a conductor and does not pick up electromagnetic radiation, which is from where most noise comes.

²³ SDSL is also significantly more reliable than ADSL. While both are provided over copper, SDSL operates with a higher noise margin than ADSL, which makes it less susceptible to noise problems.

²⁴ Bonded ADSL allows multiple ADSL lines to be bonded together to create larger internet pipes. ADSL bonding increases the physical upload & download capability of ADSL.

lines, and only 14% of end-users have discontinued their use of leased lines in the last three years. As noted above, the actual extent of switching from leased lines to ADSL appears so far to have been relatively small given the price differentials, and suggests that they are not sufficiently good substitutes to be regarded as part of the same market.

- 3.103 Our conclusion is that ADSL services do not form part of the same market as low bandwidth retail leased lines.

IV. 155 Mbit/s and 622 Mbit/s TI circuits are supplied in different markets

- 3.104 In the January 2008 consultation, we proposed that 155 and 622 Mbit/s services should be included in the same market. Most OCPs and various mobile network operators (MNOs) disagreed with this view. They claimed that the competitive conditions of these two services differed substantially, suggesting that the two services operated in separate markets. In the light of responses, Ofcom reconsidered the definition of the very high bandwidth retail TI market and set out revised proposals in the July 2008 consultation. Ofcom's reasoning, in making its revised proposals, is set out below.
- 3.105 As noted above, the methodology used in the January 2008 consultation which led us to place 155 and 622 Mbit/s lines in the same market was similar to that used in the 2004 review²⁵. Using this approach, we considered the lowest cost way of meeting a particular bandwidth requirement and the extent to which this is affected by a SSNIP. If the analysis suggests that there is likely to be switching between higher and lower bandwidth circuits (in this case, 155 and 622 Mbit/s lines) over a significant range of bandwidth demand, this indicates that circuits at different bandwidths form a single market due to the existence of a 'chain of substitution'.
- 3.106 However, the existence of this chain depends on the distribution of customers according to demand for bandwidth. Specifically, in the case of 155 Mbit/s lines, these are only constrained by 622 Mbit/s lines if a customer acquires four or five 155 Mbit/s along the same route (i.e. if a customer is acquiring multiple 155 Mbit/s services as part of a higher bandwidth requirement). Because 622 Mbit/s lines are significantly more expensive than 155 Mbit/s lines, where 155 Mbit/s lines are acquired as single lines across a particular route (i.e. where customers only wish to acquire 155 Mbit/s of bandwidth) they are unlikely to be constrained by the price of 622 Mbit/s services. This remains the case even after a SSNIP is imposed on the 155 Mbit/s line.
- 3.107 After the publication of the January 2008 consultation, we received information from respondents suggesting that in fact most 155 Mbit/s lines are acquired as single lines along a particular route. This is supported by additional analysis which we have carried out. This shows that about 70% of retail 155 Mbit/s are provided with different customer ends, that is, only 30% of 155 Mbit/s lines link the same two points as another 155 Mbit/s line. This implies that most 155 Mbit/s lines are acquired as single circuits rather than as multiple lines across the same route. This suggests that the price of 155 Mbit/s lines is generally not constrained by the price of 622 Mbit/s lines (and hence that the two services operate in separate retail markets).
- 3.108 Even if there was a break in the chain of substitution, 155 and 622 Mbit/s circuits could still be regarded as being part of the same market if the competitive conditions

²⁵ In the 2003/04 Leased line market review this methodology (as well as other considerations such as the low number of 622 Mbit/s ends) led us to conclude that 155 and 622 Mbit/s lines belonged in separate markets.

of the supply of the two services were sufficiently homogeneous.²⁶ However, the evidence suggests that the competitive conditions of 155 Mbit/s and 622 Mbit/s lines differ significantly. BT appears to have around 11% of retail 622 Mbit/s sales, but 46-56% of 155 Mbit/s lines in the UK excluding Hull. This result does not seem to be explained by 'small number' issues because significant quantities of both lines are supplied.²⁷

- 3.109 The evidence above, which was set out in the July 2008 consultation, suggests that 155 and 622 Mbit/s lines operate in separate markets. In particular, the evidence suggests that 155 Mbit/s lines are generally acquired as single lines across a particular route. Because 622 Mbit/s lines are significantly more expensive than 155 Mbit/s lines, where 155 Mbit/s lines are acquired as single lines across a particular route they are unlikely to be constrained by the price of 622 Mbit/s services.
- 3.110 Ofcom also considered again whether 155 Mbit/s services operate in a standalone market or whether they operate in a market with 34/45 Mbit/s services. We conducted extensive analysis on this point in the January 2008 consultation and concluded that 34/45 and 155 Mbit/s services are likely to operate in different markets. This view is primarily based on our bandwidth break analysis. This suggests that there is a sufficiently large price difference between 34/45 and 155 Mbit/s services that users wanting bandwidth at 34/45 Mbit/s (or below) will always prefer this to 155 Mbit/s lines (even if a SSNIP is imposed on 34/45 Mbit/s lines).
- 3.111 It is also the case that users wishing to acquire 155 Mbit/s of bandwidth or more will generally use a single 155 Mbit/s to provide the necessary service (rather than multiple 34/45 Mbit/s lines). This is because the price of two or three 34/45 Mbit/s far exceeds a single 155 Mbit/s. We have undertaken a sensitivity analysis of our bandwidth break analysis. This was carried out on the basis of adjusted data²⁸ which confirms our view that 34/45 Mbit/s lines operate in a separate market from 155 Mbit/s lines.
- 3.112 We therefore concluded that 155 Mbit/s services operate in a separate market to both 34/45 Mbit/s and 622 Mbit/s services.
- 3.113 Most respondents to the July 2008 consultation agreed with Ofcom's proposal to define separate markets for very high bandwidth TI retail circuits at bandwidths above 45Mbit/s and up to and including 155 Mbit/s and at bandwidths over 155 Mbit/s. BT said that it accepted the revised definition, although it erroneously linked the revised market definition to Ofcom's revised assumptions about economic build distance (see Sections 4 and 6 which deal with geographic market definition).
- 3.114 One respondent argued for a single market at all bandwidths and interfaces above 8 Mbit/s which should be considered "actually or prospectively competitive".
- 3.115 Ofcom believes that the evidence set out in the July 2008 consultation and summarised above supports the finding of separate markets for very high bandwidth

²⁶ Although homogeneity of competitive conditions is usually used in the context of geographic market definition as a reason for aggregating different areas not linked by demand or supply side substitution, it might also be used in the product market context.

²⁷ Around 721 622 Mbit/s ends are provided, as against around 1,224 155 Mbit/s ends.

²⁸ This data has been adjusted to take into account comments from some stakeholders that the data used in our original analysis did not reflect the "competitive price" benchmarks appropriate to a SSNIP test. This was a general complaint that was made about our bandwidth analysis, and not a complaint that focussed on our findings in relation to 34/45 and 155 Mbit/s markets (which stakeholders generally supported).

TI retail circuits at bandwidths above 45Mbit/s and up to 155 Mbit/s and at bandwidths over 155 Mbit/s.

3.116 Ofcom does not believe that a single market at all bandwidths over 8Mbit/s would be consistent with the evidence on substitutability of circuits at different bandwidths or of different interface types, which was set out in Ofcom's consultative documents and is summarised above. Moreover, there are clear variations in competitive conditions within this group of circuits.

3.117 We conclude that separate markets should be defined for:

Very high bandwidth TI retail services – over 45Mbit/s and up to 155 Mbit/s; and

Very high bandwidth TI retail services – over 155 Mbit/s

V. Bandwidth breaks: AI services

3.118 Several respondents disagreed with our conclusion that there are separate markets for low (up to and including 1Gbit/s) and high (over 1Gbit/s) bandwidth circuits. Similar issues were raised in relation to the wholesale market definition for AISBO services. The main points made by respondents which are relevant to retail market definition are set out below:

- Costs of different bandwidths: some CPs noted that the analysis was based on current BT cost data but that equipment prices that drive the differences in bandwidth costs are expected to fall faster than the cost of ducting and fibre. This will reduce the difference in (competitive) prices between low and high bandwidth AI circuits and hence increase the potential for demand-side substitution between high and low bandwidth AI services;
- Development of ORCHID-based platform: related to the previous point, some CPs highlighted that BT's deployment of its ORCHID platform would erode cost differences between different bandwidths. One respondent quoted from the BCMR consultation, which states, "the incremental costs of providing additional bandwidth [over the ORCHID platform] will not vary significantly".
- BT's ability to price services well above costs: one respondent argued that the fact that cost differences are much smaller than price differences for different bandwidth circuits services suggests that BT can use value-based pricing. According to this respondent, this suggests that all circuits are in the same market;
- Size of high bandwidth AI market: some CPs argued that the low volume of circuits above 1 Gbit/s does not justify a separate market being defined for these services. A related argument is that the low number of circuits means that it is not possible to draw conclusions about this market, as any results are likely to be affected by 'small number' issues;
- Future developments in competitive conditions: some CPs argued that the current view of competitive condition was not sufficiently forward looking. The current market is one of 'early adopters' which is largely based in London. As demand for these services matures, and the product becomes a 'mass market offering', these CPs argue that demand for backhaul services above 1 Gbit/s will develop in areas outside London and that competitive conditions in the provision

of high bandwidth services will become increasingly similar to competitive conditions in the provision of low bandwidth services.

- 3.119 In addition, two OCPs informed us that our estimates of market shares in the high bandwidth AI market were not robust. In particular, they informed us that various circuits that had been originally reported to us as AI high bandwidth services were in fact Wavestream services, which should therefore be excluded. The implications of this are primarily for the SMP assessment, but are dealt with here to the extent that they may impact on apparent differences in competitive conditions between low and high bandwidth markets.
- 3.120 Ofcom has reviewed its proposal to define separate markets for low and high bandwidth AI circuits in the light of the above responses. The above points are addressed in turn.

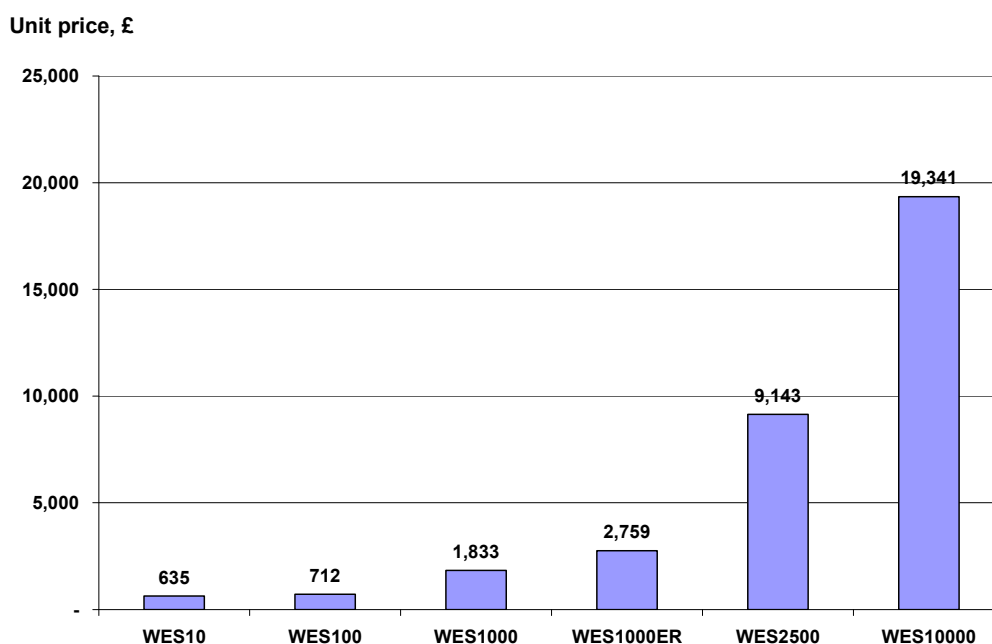
Revised cost analysis

- 3.121 We have refreshed our cost analysis to take account of updated information on the structure of WES and BES costs, in order to check the robustness of our conclusions with regard to bandwidth breaks.
- 3.122 We have examined updated information relating both to the present time, and also examined whether our conclusions are likely to change in future due to Project ORCHID.

Present costs

- 3.123 We know that the way that the cost of provision varies with bandwidth is largely driven by the higher cost of equipment at higher bandwidths, since these costs form a large proportion of the total cost of provision, and other costs (ducts, fibre) are constant across bandwidths. We have therefore updated our analysis of the cost of equipment across bandwidths. Figure 3.1 below shows the result of the analysis, which uses information on the current cost of equipment provided by BT.

Figure 3.1 Cost of AISBO equipment across bandwidths



Source: BT 07/08 Regulatory Financial Statement.

- 3.124 The analysis above shows that there is a considerable difference in the cost of Ethernet equipment between 1Gbit/s, 2.5 Gbit/s (3.3 times higher than 1Gbit/s) and 10 Gbit/s (7 times higher than 1Gbit/s) circuits.
- 3.125 The updated data suggest that the additional cost of providing a 2.5 Gbit/s circuit compared to a 1 Gbit/s circuit is sufficient that they are unlikely to be seen as close demand-side substitutes, if price is equal to cost (as in a competitive market). There also appear to be significant differences between the costs of 2.5 Gbit/s and 10 Gbit/s circuits. However, there are still very few 10 Gbit/s circuits, and the significant difference we observe now might disappear once manufacturers sell more 10 Gbit/s boxes in the future.

Expected changes in costs

- 3.126 Ofcom has considered two main issues as part of its analysis of likely future developments in costs. The first is whether there is any evidence that suggests that the current difference in the cost of equipment between low and high bandwidth circuits will change over the lifetime of the current review (considered to be four years). The second is BT’s project ORCHID, discussed in the next Section below.
- 3.127 Some operators have told us that they believe the cost of equipment for use at different bandwidths might converge significantly. However, for this to happen, either there must be developments in technology to allow the same equipment to be used with circuits at all bandwidths or, if it remains necessary to use different equipment at bandwidths above 1Gbit/s, its cost must fall to levels much closer to the cost of low bandwidth equipment.
- 3.128 It is possible to increase the bandwidth of AISBO circuits at up to 1Gbit/s and above by changing the port card in the NTE. However, for circuits at 2.5Gbit/s, SDH rather than Ethernet interfaces and dedicated NTE are employed. Therefore migration within the <2.5Gbps portfolios can be accomplished via card change whereas

migration from <2.5Gbps to 2.5Gbps or 10Gbps, or from 2.5Gbps to 10Gbps, requires NTE change. The cost of moving from a low bandwidth (up to 1Gbit/s) circuit to a high bandwidth (over 1Gbit/s) circuit is therefore likely to be significantly higher than the cost of substituting one circuit within the low bandwidth market for another within that market but of different bandwidth.

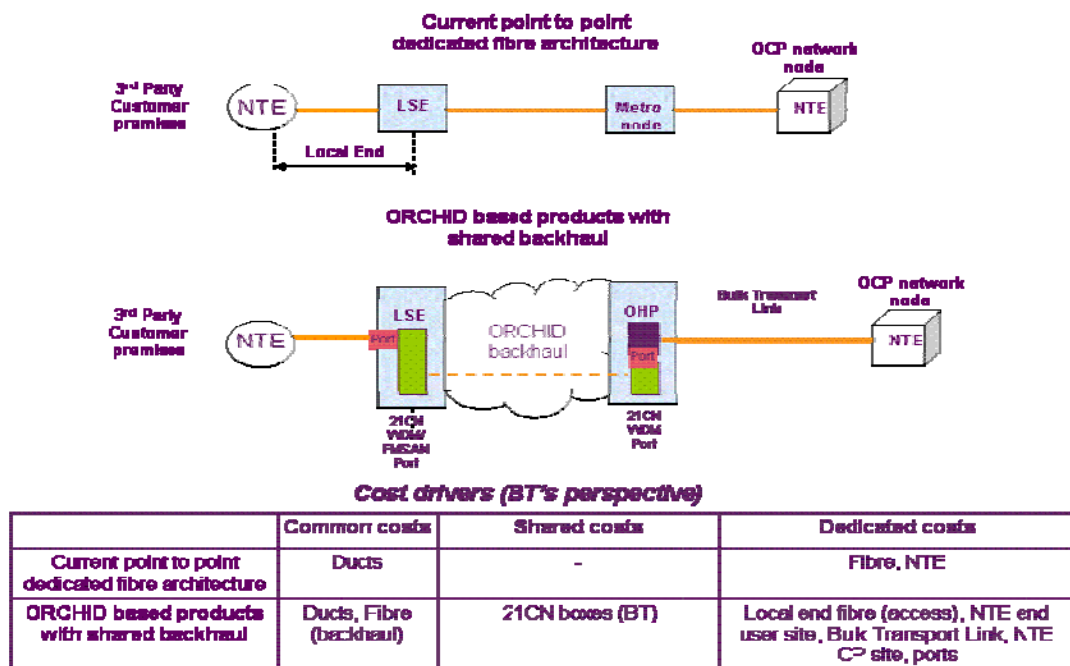
3.129 In addition, users of Ethernet interfaces are able to benefit from scale economies arising from the very high volumes of Ethernet components used in carrier and enterprise markets. The volume of SDH interfaces sold is however much smaller than Ethernet and growing at a much smaller rate, if at all. As a consequence one would expect the cost of Ethernet components to be declining whereas the cost of SDH components is likely to be static or possibly increasing.

3.130 The forward looking analysis seems therefore to indicate that the difference in the cost of equipment between 1 Gbit/s and 2.5 Gbit/s AI circuits is unlikely to disappear, as the costs of the underlying hardware and software are not likely to converge.

Impact of ORCHID

3.131 With project ORCHID underway, BT is moving its wholesale Ethernet portfolio from a point to point dedicated architecture to a shared (backhaul) architecture. This move is likely to result in a significant change in the cost structure and cost drivers of high bandwidth AI services. The figure below shows at a high level BT’s view of how the transition will affect the cost and structure of service provision.

Figure 3.2: Impact of ORCHID on cost structure



Source: Ofcom, November 2008.

3.132 AI circuits are currently provided using point to point dedicated fibre. The costs of fibre and NTE are therefore incremental to the provision of a circuit to a particular customer. However, of these, only the cost of the NTE varies according to the bandwidth of the circuit. Our analysis above shows that it is the incremental cost of

(predominantly) the NTEs between a 1 Gbit/s and a 2.5 Gbit/s circuit that drives the difference in the cost of provision.

- 3.133 In BT's methodology, duct is treated as a common cost, that is, a cost which is not incremental to the provision of a particular service (or circuit) but is instead caused by the provision of a number of different services among which it is common. In general, there may be no uniquely correct way to allocate common costs among these services. However, it is frequently the case that they are allocated in proportion to incremental costs. If incremental costs do not vary with bandwidth, then neither will common costs if these are allocated proportionately. For this reason, the costs of current AI services have been assumed to be largely invariant to bandwidth, apart from the cost of the NTE. If this pattern of costs is reflected in the competitive level of prices, these will also not increase strongly with bandwidth, except to the extent that they reflect NTE costs.
- 3.134 Project ORCHID is expected to have two main effects on costs, and hence our view of the competitive price of AI services. Firstly, the overall cost of provision of circuits at all bandwidths is expected to be reduced. Secondly, and potentially of greater importance for AI market definition, a higher proportion of costs will be shared between a number of products and services. In particular, the cost of backhaul will fall into this category, as will the cost of BT's 21CN equipment. The access fibre and the NTE on the end user's site remain dedicated costs (i.e. are incremental to the demands of individual subscribers).
- 3.135 The key issue for our SSNIP analysis is then to identify which costs vary with bandwidth and by how much are the costs of supplying high bandwidth circuits greater than the costs of supplying low bandwidth circuits. As now, only the cost of NTE among the "dedicated costs" is thought to vary significantly with bandwidth. We have therefore focussed on the cost of shared backhaul.
- 3.136 Once ORCHID is implemented, the same backhaul infrastructure will be used to provide circuits of different bandwidths (in contrast to the point to point dedicated fibres currently used). Given that the maximum capacity of the backhaul infrastructure will then be fixed in the short-run, the use of (part of) this capacity for one service will then prevent it being used for another service, and the greater the bandwidth used for the first service the less will be available for other services. The short-run marginal cost of additional capacity (bandwidth) may then be quite high, where capacity is already fully used. In the long-run of course, capacity is not fixed and in fact on an NGN additional capacity can be installed at relatively low marginal cost. But there would still be a tendency for the cost of a circuit to increase with the bandwidth of that circuit. Then, if we assume that the competitive price for backhaul reflects the costs of provision, these prices will also be positively related to the bandwidth of the circuit.
- 3.137 Moreover, whilst it is theoretically efficient for prices to equal marginal costs, since on an NGN there are significant economies of scale, average costs are above marginal costs and so setting prices at marginal cost will result in losses. This would be unsustainable in a competitive market. Identifying the most efficient way of setting prices to recover total costs in these circumstances is a complex issue but it will generally be efficient for prices to be related to (peak) capacity used. One possibility is that multi-part tariffs combining fixed and capacity-related elements could be used. Further discussion of this issue is beyond the scope of this review but, for our purposes, the key point is that the competitive price of shared backhaul is likely to exhibit a significant bandwidth related component.

- 3.138 ORCHID is therefore, if anything, likely to result in a somewhat greater tendency of costs and hence competitive price levels to increase with bandwidth than at present. This is because firstly, it is likely that the largest reductions in costs will be in network costs. This means that NTE costs, which vary strongly with bandwidth (at least above 1Gbit/s), may form a higher proportion of total costs. And secondly, the cost of shared backhaul is also likely to vary with bandwidth. Lastly, additional equipment (21CN boxes) costs will also be shared.
- 3.139 It follows that switching from 1 Gbit/s to 2.5 Gbit/s will not only incur the incremental cost of the NTE at the end users' sites, but also a significant incremental cost for migrating across bandwidths between 1 Gbit/s and 2.5 Gbit/s. This supports the view that the migration to ORCHID-based products will not per se imply a lower incremental cost between 1 Gbit/s and 2.5 Gbit/s services, to an extent sufficient to imply that Ofcom should revise its proposed market definition.

Pricing above cost

- 3.140 One respondent commented that BT's ability to use value-based pricing suggests that all circuits are in the same market. However, Ofcom believes that it is not possible to make this inference. This is because, for two services to be in the same market they must usually be either demand or supply-side substitutes. The observation that prices may be value-based does not establish that either is the case and indeed value-based pricing is a form of price discrimination which is only sustainable if such substitution is at least to some extent limited. This is because, if two products were perfect substitutes, any attempt to set charges on the basis of customer valuations would result in some customers switching to the lower priced service, or in some customers reselling to others (arbitrage). This would tend to undermine any attempt to price on the basis of value. Therefore, the use of value-based pricing is not inconsistent with the finding of separate markets at low and high bandwidths.

Size of the market

- 3.141 The alleged small size of the high bandwidth market – estimated by UKCTA at 2200 circuits in 2006 compared to 36500 for the low bandwidth market - appears to rest on a circuit count. In revenue terms, the relative size of the high bandwidth market would be somewhat greater. The market is anyway clearly of sufficient size not to be regarded as *de minimis* and to avoid instability caused by “small number problems”.
- 3.142 One operator repeated this point in its response to the July 2008 consultation, even though this issue was not discussed there. It did not raise any new arguments but suggested that Ofcom should keep the issue under review.

Future developments in competitive conditions

- 3.143 Some respondents, particularly C&W, have suggested in their responses to the January 2008 consultation, that the market for circuits above 1Gbit/s is currently concentrated in London and other major urban areas where a number of competing operators have their own infrastructure. Once the demand for circuits above 1 Gbit/s grows in areas where alternative infrastructures are less well developed, these operators argue that competitive conditions in the high bandwidth AI market will come to resemble those in the low bandwidth market.
- 3.144 The point made by respondents is potentially relevant to the definition of the geographic area covered by the market (discussed in Section 6), as well as the

product market. The gist of these respondents' argument is that the underlying competitiveness of AI markets differs according to geography. At present, demand for high bandwidth circuits is concentrated in areas where provision is likely to be competitive. This means that competitive conditions in the high bandwidth market appear to be significantly different to those in the low bandwidth market, demand for which is more geographically widespread. However, these respondents argue, demand for high bandwidth circuits will in time also spread to areas where there is less scope for competitive provision, and competitive conditions will then come to resemble those in the low bandwidth market. This would then remove one of Ofcom's reasons for regarding low and high bandwidth AI circuits as separate product markets.

3.145 We have considered this issue, and in particular how likely it is that in the lifetime of this review a significant demand for circuits above 1 Gbit/s would appear outside major urban areas. Our conclusion is that this is unlikely to happen, for the following reasons:

- applications that require such high bandwidths tend to be concentrated in urban areas where large users such as financial institutions and government offices are located;
- demand for LLU backhaul in dense traffic areas is currently being met with circuits of speeds up to 1 Gbit/s, with investments for the forthcoming years now concentrating on 1 Gbit/s circuits. There does not seem to be a significant actual or prospective demand for LLU backhaul at higher bandwidths; and
- demand for broadband in other areas, where the lower ability to exploit economies of scale makes LLU generally less attractive, is currently being met largely by use of bitstream access. This is unlikely to change in the near future.

Revised market share analysis

3.146 We discuss our market share analysis briefly here because market shares are one indicator which we have used to identify differences in competitive conditions between low and high bandwidth retail AI markets, and this is relevant to market definition. As noted above, even in the absence of demand or supply-side substitution, it might still be reasonable to analyse low and high bandwidth circuits as a single market, provided competitive conditions were sufficiently homogeneous.

3.147 We estimated in January that BT's share of the retail low bandwidth AI market was 72% whilst its share of the retail high bandwidth market was 13%. Ofcom's calculations suggested that BT's share of the wholesale high bandwidth AISBO market was 26%, compared to 73% for low bandwidth AISBO, reflecting the much greater investment in competing infrastructures which has taken place in the high bandwidth market.

3.148 Ofcom has revised these figures and now estimates that BT's share of the high bandwidth AISBO market at December 2006 was 49% rather than 26% (the figure in the consultative document). The figure has increased because of the reallocation of COLT and Vtesse circuits, as a result of submissions by these operators. Ofcom has also attempted to obtain a more up-to-date view of competition in the market by estimating BT's market share at April 2008. The results show that BT's market share is likely to lie between 38% and 40%, a decrease compared to December 2006.

- 3.149 As noted above, this is primarily relevant to the SMP analysis at the wholesale level and is discussed further in Section 7. It is relevant to market definition insofar as it suggests that the extent of the difference in competitive conditions between low and high bandwidth retail markets may have been overstated in the consultative document. However, given the differences which remain even after the recalculation, the conclusion that competitive conditions are not homogeneous appears robust. This is particularly so given that entry barriers into the high bandwidth market are relatively low, for example because the costs which must be sunk in order to enter the market are smaller relative to the revenues available than in the low bandwidth market. The robustness of this conclusion is borne out by the entry into this market of two new suppliers since December 2006.

Conclusions on low and high bandwidth AI markets

- 3.150 The weight of evidence suggests that a significant cost (and hence, in a competitive market, price) differential is likely to remain between circuits at bandwidths up to 1Gbit/s and circuits at higher bandwidths. This is not likely to be significantly affected by the implementation of BT's Project ORCHID. This suggests that customers are unlikely to be willing to switch between low and high bandwidth circuits in response to a SSNIP above the competitive price to an extent sufficient to render that SSNIP unprofitable. Moreover, competitive conditions in the two markets appear to differ significantly (as indicated by both quantitative and qualitative factors) and appear likely to continue to do so.
- 3.151 In the light of this Ofcom believes that the market definitions set out in the January Consultation Document remain appropriate. It therefore proposes to define a market for low bandwidth AI circuits including circuits of up to and including 1Gbit/s capacity and a market for high bandwidth AI circuits including circuits of over 1Gbit/s capacity.

CCTV Circuits

- 3.152 BT has notified us that it is considering a new pricing initiative in relation to the CCTV Access products launched by Openreach on an EOI basis in March 2008. These products are used to provide CCTV services to local authorities and the police, amongst others. BT has informed us that it is considering some significant price reductions for CCTV Access products to reflect their importance to public security and the potential impact that end customers' budgetary constraints would otherwise have on demand.
- 3.153 In order to reach a view on the implications of such price reductions, Ofcom would need to consider in which market CCTV Access circuits are provided and whether there are any potential effects on competition in that market.
- 3.154 For the purposes of this market review, Ofcom has not included the supply of CCTV Access circuits within the low bandwidth AISBO market or any of the other markets covered by the review. On the basis of the evidence currently available to us, we believe that this is likely to be consistent with the application of Ofcom's standard approach to market definition. Under this approach, market definition is determined primarily by the extent of substitutability between products, though the existence of common pricing constraints and uniform competitive conditions may also be taken into account.
- 3.155 CCTV circuits are in many ways technically similar, but are not identical to, a WEES, which is included in the AISBO market. The key difference is in the type of NTE used. Ofcom believes that the differences between the NTE used for WEES and CCTV Access circuits and the costs of making the necessary adaptations are likely to limit

demand-side substitution between them, to an extent which means they could be regarded as being in separate markets. For supply-side substitution to be relevant to market definition, there must be providers of AISBO circuits, not currently supplying CCTV Access circuits, who would start supplying the latter rapidly and at low incremental cost in response to an increase in price above the competitive level. The extent of the technical similarity of WEES and CCTV Access circuits may suggest that supply-side substitution is, in theory, possible but is not in itself sufficient to establish that they are part of the same market. In addition, CCTV Access circuits and WEES do not appear to be subject to a common pricing constraint and market share data suggests that there are some differences in competitive conditions.

- 3.156 As will be apparent from the above, we do not propose as part of this market review to apply ex ante regulation to the CCTV Access products supplied by Openreach. In addition, even if CCTV Access circuits were found to be part of the AISBO market, we would not necessarily regard a difference in pricing between CCTV Access and WEES as being a breach of the No Undue Discrimination obligation applicable to WEES in the wholesale market for low bandwidth AISBOs.
- 3.157 One of the relevant considerations here would be whether differential pricing would restrict or distort competition in the relevant downstream markets. Given their different uses, and as moreover both CCTV Access and WEES are provided on an EOI basis, we consider it unlikely, based on the evidence currently available to us, that a difference in pricing between CCTV Access and WEES would necessarily restrict or distort competition in the relevant downstream markets, although we cannot of course fetter our discretion on this point.
- 3.158 We could also take account of the value to the public of CCTV Access services when considering the appropriateness of any proposed charges. We note Openreach's view of the value of CCTV services in enhancing public safety and security.

Review of proposals and conclusions

- 3.159 In light of responses to the January and July 2008 consultations, summarised in the above discussion, we have concluded that the following retail market definitions are appropriate:
- Low bandwidth TI retail market;
 - High bandwidth TI retail market;
 - very high bandwidth TI retail market – over 45Mbit/s and up to and including 155Mbit/s;
 - very high bandwidth TI retail market – over 155Mbit/s;
 - Low bandwidth AI retail market; and
 - High bandwidth AI retail market.
- 3.160 These markets are set out in tabular form below.

Table 3.3: Summary of retail product market definitions

Retail product markets	Bandwidth breaks			
TI retail leased lines	Low Up to and including 8Mbit/s (including analogue and SDSL services)	High Above 8Mbit/s up to and including 45Mbit/s	Very high 155 Above 45 Mbit/s and up to and including 155 Mbit/s	Very high 622 Above 155 Mbit/s
Alternative interface leased lines	Low Up to and including 1Gbit/s		High Over 1 Gbit/s	

Section 4

Retail geographic market definition

Introduction

4.1 In this Section we first summarise the proposals in relation to the retail geographic market definitions set out in our January and July 2008 consultations. We then set out and respond to stakeholders' responses to these proposals before providing our conclusions in relation to the retail geographic market definitions for leased lines markets in the UK.

Summary of proposals

January 2008 consultation

4.2 In the January 2008 consultation document we conducted a detailed geographic market analysis for each of the retail product markets defined (as summarised in Section 3 above). As with retail product market definition, retail geographic market definition is useful in this market review as it can be informative of the scope of the relevant wholesale markets.

4.3 Ofcom's analytical framework for defining the geographic scope of the relevant retail markets was explained in detail in Section 4 of the January 2008 consultation document. This explained that there would be a separate geographic market for each of the relevant product markets in the Hull area. For the rest of the UK, Section 4 explained why, for leased lines markets, an analysis of demand-side and supply-side substitution will generally lead to the definition of very narrow geographic markets and thus is not relevant to assessing the geographic market definition. In this light, Ofcom's analytical framework for the UK (excluding the Hull area) focussed on the presence of common pricing constraints and geographic variations in competitive conditions.

4.4 Ofcom's retail geographic analysis had three main elements:

- an analysis of retail service shares on a postal sector basis, using retail circuit information provided by operators;
- consideration of consumer survey evidence which found that around half of businesses use more than one supplier to provide business connectivity services, with the propensity to do so positively correlated with business size; and
- consideration of BT's pricing policies, which can inform the extent to which there exists a common pricing constraint across geographic areas.

4.5 As this market review is primarily considering competition in wholesale markets (with the exception of the low bandwidth TI retail market) it is not necessary for Ofcom to reach definitive conclusions on the precise scope of the various retail markets. Table 4.1 below summarises the proposed geographic market boundaries in the UK (excluding the Hull area) set out in the January 2008 consultation document for each of the retail product markets considered.

Table 4.1: Summary of proposed retail geographic market definitions in the January 2008 consultation document

Retail product market	Proposed geographic definition
Low bandwidth TI leased lines	The UK (excluding the Hull area)
High bandwidth TI leased lines	Inconclusive whether the market is national, the UK (excluding the Hull area), or local in scope
Very high bandwidth TI leased lines	Inconclusive whether the market is national, the UK (excluding the Hull area), or local in scope
Low bandwidth AI leased lines	Evidence of geographic variations in competitive conditions which might suggest the market is local in scope
High bandwidth AI leased lines	The UK (excluding the Hull area)

July 2008 consultation

4.6 In the July 2008 consultation document we assessed the geographic scope of the relevant markets for each of the two revised retail product markets: the very high bandwidth 155Mbit/s TI retail leased lines market and the very high bandwidth 622Mbit/s TI retail leased lines market. The conclusion of the retail analysis was inconclusive as to whether the geographic scope of these product markets was national or local. However, we noted that as the consultation was concerned with reviewing the related upstream wholesale markets for these services, it was not necessary for us to reach a definitive conclusion on these questions. Our proposed retail geographic market definitions from the July 2008 consultation document are summarised in Table 4.2 below.

Table 4.2: Summary of proposed retail geographic market definitions in the July 2008 consultation document

Retail product market	Proposed geographic definition
Very high bandwidth 155Mbit/s TI leased lines	Inconclusive whether the market is national, the UK (excluding the Hull area), or local in scope
Very high bandwidth 622Mbit/s TI leased lines	Inconclusive whether the market is national, the UK (excluding the Hull area), or local in scope

Review of responses to the consultations and Ofcom's response

4.7 In the January 2008 consultation, we asked the following questions:

Question 3: Do stakeholders agree with our proposed approach to geographic market definition?

Question 4: Do stakeholders agree with our proposed retail geographic market definitions?

4.8 In the July 2008 consultation we did not ask a specific question relating to the retail geographic market definition, but a broader question in relation to the definitions of the separate 155Mbit/s and 622Mbit/s T1 retail leased lines markets.

Summary of responses

- 4.9 We summarised and responded to the issues raised by respondents to the January 2008 consultation in the July 2008 consultation. For ease of reference, these are repeated below. We received no specific responses to the July 2008 consultation on the issue of retail geographic market definition.
- 4.10 BT, in its response to the January 2008 consultation agreed with the approach of identifying geographic areas with similar competitive conditions to inform geographic market boundaries. However, BT disagreed that national pricing can be indicative of a national market and do not consider Ofcom's approach to be consistent with the European Commission's guidance. In particular, BT argued that it cannot be the case that pricing decisions of one supplier can define the scope of a market.
- 4.11 C&W in its response argued that it is not practical to undertake geographic analysis in retail leased lines markets. This is because the products in these markets are point to point in nature and as such any analysis has to be undertaken on the combination of the two ends of the circuit. This point was also raised by 2 CPs.
- 4.12 KCOM, UKCTA and two CPs questioned whether it remains appropriate to define the Hull area as a separate geographic market at the retail level as very few leased lines would have both ends located within the relevant geographic area.

Ofcom's response

- 4.13 Ofcom disagree with BT that national pricing cannot be indicative of a national market. Where common pricing constraints exist this can have the effect of extending the constraints present in one geographic area into other geographic areas where the common pricing constraint is present. However, that is not to say that if a single operator were to change its pricing policies and begin to charge on a local basis that the market would automatically become local. The motivations for the change in pricing policy would need to be understood, for example, to explore whether there is evidence that the change was motivated by geographic variations in competitive conditions. Moreover, it would not necessarily be the case that the geographic area over which prices are the same would constitute the boundary of the relevant market.
- 4.14 Ofcom also disagrees that consideration of pricing policies and common pricing constraints is inconsistent with the European Commission's guidance. Common pricing constraints can indicate the geographic areas in which competitive conditions

are similar. Moreover, Ofcom notes for example the European Commission's comments letter to the Austrian NRA, on its notification of its analysis for the wholesale broadband access market in Austria²⁹. The European Commission in its comments letter recognised the relevance of national pricing in the NRA's decision to define the geographic scope of the market as national³⁰.

- 4.15 On the point made by a number of respondents that retail markets should be national, Ofcom disagrees. The scope of the relevant markets should be defined in reference to the available evidence. This remains the case when assessing whether markets are local, even if this is more complex/ less practical than defining the markets to be national. In addition, Ofcom recognises that retail leased lines have two ends which, by definition are in different locations, but does not consider that this precludes the finding of local retail markets.
- 4.16 Similarly, Ofcom considers that the evidence continues to suggest that a local geographic market exists in the Hull area for retail leased lines. There is a separate network in the Hull area and there are different constraints present in the Hull area compared to the rest of the UK.

Conclusions

- 4.17 After careful consideration of the comments received in response to the January 2008 consultation, Ofcom sees no reason to amend its conclusions of its geographic analysis of the various retail product markets considered in this review which are summarised in Table 4.1 and Table 4.2 above. That said, Ofcom again notes that this market review is primarily concerned with assessing competition in wholesale markets and as such it is not necessary for Ofcom to reach definitive conclusions on the precise scope of the various retail markets (with the exception of the low bandwidth TI market).

²⁹

http://circa.europa.eu/Public/irc/infso/ecctf/library?l=/sterreich/registerednotifications/at20080757/at-2008-0757_enpdf/ EN_1.0 &a=d

³⁰ Page 7.

Section 5

Wholesale product market definition

Introduction

5.1 In this Section, we first summarise the wholesale product market definitions set out in our January and July 2008 consultations. We then set out and respond to stakeholders' responses to these proposals before providing our conclusions with regard to the appropriate wholesale product market definitions for leased lines markets in the UK.

Summary of proposals

5.2 We set out in Table 5.1 below the wholesale product markets we have defined for the purposes of this review. Our conclusions on market definition are the same as those proposed in our January 2008 consultation, except in the case of the very high bandwidth TISBO markets where we have adopted the revised definition proposed in the July 2008 consultation.

Table 5.1: Summary of proposed wholesale product market definitions in the January 2008 consultation, as modified in the July 2008 consultation

Wholesale product markets	Bandwidth breaks			
	Low	High	very high-155	very high-622
TI symmetric broadband origination (TISBO)	Up to and including 8Mbit/s (including analogue and SDSL services)	Above 8Mbit/s up to and including 45Mbit/s	Above 45 Mbit/s up to and including 155Mbit/s	Above 155 Mbit/s
Alternative interface symmetric broadband origination (AISBO)	Low Up to and including 1Gbit/s		High Above 1 Gbit/s	
Trunk segments (SDH/PDH)	All bandwidths			

General approach to wholesale market definition

5.3 As discussed in Section 3, the relevant market boundaries are determined by identifying constraints on the price setting behaviour of firms. Our assessment of competitive constraints at the wholesale level has been informed by the proposed retail market definitions. This is because the demand for the wholesale service is a derived demand, i.e. the level of demand for the wholesale input depends on the demand for the retail service.

- 5.4 In some cases, a wholesale leased line service may be used as an input to a number of markets that are defined as separate at the retail level (and potentially outside the scope of the retail leased line market). We have therefore sought to take into account the possible use of these wholesale inputs in these downstream retail markets.
- 5.5 Our market definition assessment has also been conducted on the assumption that there is no SMP-based regulation in the relevant wholesale markets under review. However, any wholesale regulation in markets upstream of these markets, or which exists independently of a finding of SMP in the markets being reviewed (e.g. BT's Local loop unbundling obligations) has been taken into account. Existing regulations which are not conditional on a finding of SMP in the business connectivity markets under review are assumed to be in place when assessing our wholesale product market definition.

January 2008 consultation

- 5.6 In the January 2008 consultation document, we conducted analysis to assess the relevant wholesale product market definition, taking into account our proposed retail product market definitions. The proposed definitions in our January 2008 consultation document reflected our consideration of six key wholesale product market definition issues:
1. Wholesale access and backhaul markets: does a combined market for access and backhaul exist?
 2. Symmetric broadband origination (alternative versus TI): can specific SBO product markets be identified for AI and TI services?
 3. Symmetric broadband origination (used to support other retail services): should wholesale inputs (such as LLU backhaul and RBS backhaul) used to support other downstream retail markets be included in relevant SBO markets?
 4. Wholesale trunk market(s): does a separate market for trunk segments exist and where should the break between trunk and SBO be identified?
 5. Trunk versus alternative conveyance: do other forms of "core" connectivity such as broadband conveyance provide a competitive constraint on trunk services used for leased lines?
 6. Bandwidth: what are the appropriate bandwidth breaks, if any, for trunk and SBO services?
- 1. Wholesale access and backhaul markets: does a combined market for access and backhaul exist?**
- 5.7 In the January 2008 consultation document, we proposed to find a combined market for access and backhaul, which we referred to as "symmetric broadband origination" (SBO). Although BT is beginning to offer separate access and backhaul products, we suggested that in general CPs would continue to purchase access and backhaul together (i.e. as a combined product). We thought that the likelihood that separate access and backhaul markets would emerge would be limited by a number of factors. In particular, we thought that opportunities to combine different traffic streams, which are currently conveyed over service-specific platforms, over the same (converged) backhaul links would remain limited. We therefore proposed to define markets for symmetric broadband origination (combined access and backhaul) services as, in the

most part, access and backhaul are likely to continue to be procured together over the timeframe of this review.

2. Symmetric broadband origination (AI versus TI): can specific SBO product markets be identified for AI and TI services?

5.8 We proposed to define two forms of symmetric broadband origination (AI and TI) referred to respectively as AISBO and TISBO services. The identification of these two sets of wholesale markets primarily reflected the distinction we made between AI and TI services at the retail level. We also considered there to be a lack of evidence of any direct constraints at the wholesale level (arising either from demand-side and or supply-side substitution).

3. Symmetric broadband origination (to support other retail services): should wholesale services used to support LLU and RBS backhaul be included in relevant SBO markets?

5.9 We considered whether specific wholesale services, for example those used to support LLU and as part of mobile networks (e.g. RBS backhaul, microwave backhaul links) should be included in either of the AISBO and TISBO markets. We considered that the wholesale services employed for example for RBS backhaul were essentially the same as those captured by our TISBO and AISBO definitions. We also considered that competitive conditions were broadly similar to those seen respectively for other Wholesale AISBO and TISBO services. We therefore proposed that LLU backhaul should fall in the appropriate AISBO market and RBS backhaul in the appropriate TISBO market.

4. Separate wholesale trunk market(s): does a separate market for trunk segments exist and where should the break between trunk and SBO be identified?

5.10 We proposed to define separate markets for trunk circuits and TISBO circuits. We based our proposed market definition primarily on:

- the complementary nature of trunk and terminating segments (pointing to an absence of demand- and supply-side substitution);
- differences in competitive conditions reflecting the far greater potential for CPs to realise economies of scale in trunk; and
- the fact that a significant number of CPs do not acquire trunk as part of a bundle with terminating segments.

5.11 Given that we proposed a separate trunk market, a particular issue was how to identify the precise location of the boundary between trunk and TISBO markets. In the 2003/04 Review, we based the break point between trunk and TISBO on the location of particular core nodes on BT's network, namely its Tier 1 nodes. We highlighted in the January 2008 consultation that defining the scope of the trunk market based on BT's Tier 1 nodes was not an ideal solution.

5.12 We were concerned, in particular, that Tier 1 nodes are specific to BT's network and can reflect its historical decisions over where to locate network nodes. These network locations may not necessarily be optimal network points for OCPs. We observed, for example, that many CPs had apparently not built out to all of BT's Tier 1 nodes. This

suggested that it is not economically viable for CPs to build their trunk networks beyond a certain point and certainly not to all of BT's Tier 1 nodes.

- 5.13 We explained that the trunk definition should seek to capture the way in which operators build networks in order to benefit from opportunities for traffic aggregation and hence exploit economies of scale. Many CPs have built core networks linking main population centres. Hence, most CPs will have points of presence in those main population centres to collect traffic from customers and convey this over their own core networks. However, in most circumstances, a CP would not be likely to locate (i.e. interconnect with BT) at more than one Tier 1 node in close proximity to another Tier 1 node within the same urban area. Only where there was a sufficient volume of traffic with a particular urban centre could there be sufficient opportunity to exploit economies of scale to justify additional interconnection.
- 5.14 We therefore wanted to define the break between trunk and terminating markets in a way which more accurately reflects the likely boundary between the more competitive trunk routes connecting urban centres, and the less competitive terminating segments distributing traffic to customer premises within these centres. This does not of course mean that all trunk routes are necessarily competitive, or that all SBO markets are necessarily uncompetitive. But it is consistent with the idea that competitive entry is more likely where entrants are able to benefit from economies of scale by aggregating traffic onto their own high capacity links..
- 5.15 In light of the above observations regarding where CPs were likely to build trunk, we therefore proposed to identify a consolidated set of nodes, which we referred to as "aggregation nodes". However, given that the identification of these aggregation nodes was inherently reliant on geographic analysis (for example locations of major population centres), we examined the precise location of aggregation nodes in our analysis of wholesale geographic market definition (this is discussed in Section 7).

5. Trunk versus alternative forms of conveyance: do other forms of "core" connectivity such as broadband conveyance provide a competitive constraint on trunk services used for leased lines?

- 5.16 In the January 2008 consultation, we assessed whether trunk used to provide circuits for the TI market (referred to as SDH/PDH trunk) would form part of the same market as other forms of "core" connectivity. We proposed to define a separate market for trunk segments used to support SDH/PDH services. Our assessment was that suppliers could not easily switch from SDH/PDH trunk to other broadband conveyance technologies or vice versa. It was therefore unlikely that a hypothetical monopolist of SDH/PDH trunk supply seeking to impose a SSNIP would be constrained by substitution at the wholesale level to other forms of core connectivity.
- 5.17 In addition, as we have concluded that TI leased lines services are in separate markets from other services (see Section 3) at the retail level, it is also unlikely that we would include different types of core connectivity in the same market via an indirect constraint. An indirect constraint would be relevant if a hypothetical monopolist seeking to impose a SSNIP on trunk services was constrained due to substitution at the retail level arising from the increase in wholesale trunk charges being passed through in retail prices. However, as we proposed to find that retail services served by SDH/PDH trunk are in a separate market to other business connectivity services served by broadband conveyance, an indirect constraint would not arise. We therefore proposed to define a separate SDH/PDH trunk market.

- 5.18 In addition to finding a separate market for SDH/PDH trunk, we proposed not to identify a specific AI trunk market. This was because AI retail services were (and are) not currently provided using trunk segments (although longer distance Ethernet circuits can be provided over SDH bearers; and BT's "Megastream Ethernet" services, for example, use its ATM network).
- 5.19 We considered that deployment of Ethernet trunk was unlikely until the development and roll-out of carrier class Ethernet. Carrier-class Ethernet is a superior Ethernet standard being developed to overcome the traditional limitations of the current Ethernet standard in wide area networks. It would enable core connectivity for Ethernet services to support carrier-class SLAs/SLGs essential for many business connectivity customers.
- 5.20 We noted that the timing of the deployment of carrier-class Ethernet is highly uncertain and depends both on technological issues and BT's and CPs' migration plans. And over the next three to four years, we thought that the available evidence suggests that technology issues would persist. Therefore, it was considered unlikely that a wholesale product capable of providing a direct constraint on SDH/PDH trunk would become available or that OCPs would switch to greater self-supply of trunk circuits (over their own core capacity). On this basis, for the timeframe of this review, we considered that we should identify a wholesale product market for SDH/PDH trunk only. However, given a degree of uncertainty over these issues, we also proposed to keep trunk market developments under close review.

6. Bandwidth breaks: what are the relevant bandwidth breaks that should apply to AISBO, TISBO and trunk markets?

- 5.21 Ofcom considered that bandwidth breaks identified in retail markets would also apply at the wholesale (AISBO and TISBO) level, because of the derived nature of wholesale demand.
- 5.22 Although TISBO and AISBO are wholesale services, Ofcom first considered market definition at the retail level. This is necessary because the demand for wholesale services such as TISBO and AISBO is a derived demand and depends on the demand for the retail services that those wholesale services support. In general, where the cost of an upstream input accounts for a sufficiently large proportion of the retail price of a product, the range of available substitutes at the retail level will inform the likely range of substitutes for the wholesale service. This is because a rise in the price of a wholesale service that is passed through in the price of one retail service will cause retail customers to switch to substitute retail products, reducing demand for the wholesale input. For these reasons, we based our bandwidth breaks for AISBO and TISBO markets on those identified at the retail level.
- 5.23 On the other hand, we did not identify distinct bandwidth breaks for trunk segments. We reasoned that this is because, unlike in the SBO market, in which the bandwidth of symmetric broadband origination is determined by the bandwidth of the relevant retail leased line, trunk traffic can be aggregated together such that it is economic for higher bandwidth trunk bearer circuits to be used to deliver services at any relevant service bandwidths.

July 2008 consultation

- 5.24 In our July 2008 consultation, we explained why our proposed identification of a further bandwidth break in the retail very high bandwidth TI market would map onto

the TISBO markets. This resulted in the identification of further split in the very high bandwidth TISBO markets between 155 Mbit/s and 622 Mbit/s circuits.

Review of responses to consultations

5.25 In the January 2008 consultation, we asked the following questions:

Question 5: Do stakeholders agree with our proposed wholesale product market definitions? In particular, do you agree with Ofcom that: i) a separate market now exists for high bandwidth AISBOs, and ii) the very high bandwidth TISBO market now includes circuits at bandwidths above 140/ 155 Mbit/s?

5.26 However, part ii) of question 5 in the January 2008 consultation was superseded by our revised proposals in respect of the very high bandwidth TISBO market. Therefore, in the July 2008 consultation we asked the following question:

Question 2: Do stakeholders agree with our proposal to identify separate markets for very high bandwidth TISBO at speeds above 45 Mbit/s and up to and including 155 Mbit/s (TISBO 155 Mbit/s); and wholesale very high bandwidth TISBO at speeds above 155 Mbit/s (622 Mbit/s TISBO)?

Summary of responses

5.27 The following Section summarises respondents' views and our responses to these in respect of our wholesale definitions. We have organised the responses by the six main issues identified in the January 2008 consultation. We cover the specific comments that deal with our proposed wholesale bandwidth breaks raised either in relation to our January and July 2008 consultation questions under Issue 6.

1. Access and Backhaul markets

5.28 Many CPs responding to the January 2008 consultation did not provide specific comments as to whether a combined access and backhaul market existed. The three CPs that commented on this area did not support a combined access and backhaul definition.

5.29 BT highlighted that Ofcom has accepted Undertakings from BT in which 'BT's Backhaul Network' and 'BT's Access Network' are defined separately and different obligations are imposed on backhaul products. BT argued that this would suggest that access and backhaul products have different characteristics and that, even if they are defined as being in the same market, it may be appropriate to reflect differences between them in any remedies imposed.

5.30 One CP did not agree with the combined access and backhaul market mainly because of the inclusion of LLU backhaul in the same market as other AISBO services. In particular, it expressed concern about how this might impact on possible remedies imposed on LLU backhaul.

5.31 One CP argued that we should identify a break between access and backhaul because infrastructure based competition is not sustainable in the access layer whereas, in its view, backhaul was prospectively competitive in some geographic locations. This pointed to variations in competitive conditions between access and backhaul segments (at least in some geographic locations). And in order that CPs

can take advantage of economies of scale and scope in backhaul, it would be preferable to disaggregate access and backhaul services.

- 5.32 The Welsh Assembly Government highlighted that the deployment of alternative backhaul networks such as its own “Fibre Speed³¹” initiative may also challenge, in the near future, the conclusion of a combined access and backhaul market. It considered that there was a high prospect for such changes in the market. It therefore thought that it would be appropriate to keep developments under review.

Ofcom’s response

- 5.33 Ofcom does not consider that within the timeframe of this review it would be appropriate to define separate markets based on variations in competitive conditions between access and backhaul. As we discuss below, while some development in the market might occur in the next four years, we think that CPs will predominantly continue to purchase access and backhaul services together.

- 5.34 The main driver for the demand for separate access and backhaul products is the desire to aggregate a number of lower capacity access segments together onto a single large capacity backhaul link. For this to be worthwhile, the operator must have a sufficient number of access circuits or customers in close proximity to each other.

- 5.35 So far, there has been only limited take-up of separate access and backhaul products (respectively WESA and WESB for the AISBO market and TILLAPs and TILLBPs for the TISBO market), compared to their “bundled” counterparts (i.e. WES and PPCs). In the January 2008 consultation, we suggested that this arises from:

- aggregation opportunities being limited to areas where CPs can aggregate together sufficient numbers of access lines onto main backhaul links;
- limited opportunities for CPs also to aggregate other types of traffic over the same link (Ethernet, broadband, voice TI leased lines) – referred to as converged backhaul.
- Some concerns that the disaggregated products for WESs (WESA and WESB) and PPCs (TILLAPs and TILLBPs) that have been available to date have not been fit for purpose.

- 5.36 In the January 2008 consultation, we noted that even if demand had been limited to date, this did not necessarily mean that there would not be growth in the demand for separate access and backhaul services within the timeframe of the review. However, having assessed the underlying drivers and opportunities for CPs to take advantage of separate access and backhaul services, we still thought that CPs would predominantly continue to acquire access and backhaul services together.

- 5.37 Some CPs have argued that there will be demand for separate access and backhaul. But we have not seen further evidence in those responses to suggest that the aggregation and converged backhaul opportunities will be sufficiently material to alter the view that access and backhaul will predominantly continue to be acquired together.

³¹ This is a Welsh Assembly Government public/private initiative supported by European Structural Funds and from GEO, the supplier chosen to build and operate the network. This will provide an open-access fibre network predominantly (but not exclusively) to link business parks in North Wales.

- 5.38 In the January 2008 consultation, and as highlighted in the second bullet above, we consider that the emergence of converged backhaul is likely to be a key driver of demand separate for access and backhaul products. Converged backhaul would mean that CPs could support traffic streams from multiple downstream services (including Ethernet, broadband, voice) over a single backhaul fibre. As set out in the January 2008 consultation, there is a range of factors preventing this occurring at present, including:
- Technical issues: the characteristics and specifications required of wholesale products vary according to the different traffic types. At present the only wholesale products which could support the technical requirements of all services are SDH/PDH or WDM;
 - Interconnection: currently interconnection occurs on service specific platforms at distinct geographic nodes. In many cases nodes for different services are not in the same place which greatly restricts the ability to use converged backhaul; and
 - Investment uncertainty: given the current transition phase to 21CN few operators are likely to invest in their own backhaul products given a degree of market uncertainty and the potential for this to potentially reinforce economic bottlenecks .
- 5.39 These factors together suggested that converged backhaul was unlikely to exist on a sufficient scale to support separate access and backhaul markets.
- 5.40 Some of the CP's were concerned about the effect of a combined access and backhaul definition on the remedies that we might impose. Their concern is that any remedies that might arise out of such a market definition (and SMP finding) would require BT only to provide combined access and backhaul products. We discuss this in more detail in our remedies in Section 8.
- 5.41 However, we note here that the identification of a combined access and backhaul market is consistent with the fact that BT's Undertakings require it to provide distinct WES A (access) and WES B (backhaul) services. As described above, for the reasons set out in the January 2008 consultation, we believe that operators will generally purchase these services together over the timeframe of the review. However, it is possible that some operators will purchase the services separately if the opportunity arises to realise economies of scale in backhaul. The disaggregated products BT makes available are intended to facilitate this.
- 5.42 The Welsh Assembly Government pointed to the deployment of its Fibre Speed project which it described as an "alternative, open-access backhaul infrastructure". It argued that this could lead in the near future to the development of geographic differences in competitive conditions and to the separation of access and backhaul markets. It urged Ofcom to be prepared to revisit the conclusions of this review if this became necessary due to changes in market conditions.
- 5.43 Ofcom will of course continue to monitor market developments from all sources, but our judgement is that, on the basis of the evidence, it is not likely that separate access and backhaul markets will emerge in the timeframe relevant to the review.

Conclusions

- 5.44 Our conclusion is therefore that we should define wholesale SBO markets including both access and backhaul.

2. Alternative interface and TI markets

- 5.45 As with the retail AI and TI markets, there were mixed views as to whether AISBO and TISBO are in the same markets. Various CPs did not agree that separate AISBO and TISBO markets existed (with many pointing to the arguments they presented at the retail level for a combined market definition).
- 5.46 BT noted (in addition to its comments on retail markets) that TDM (TI) and Ethernet technologies used in the transport layer will become interchangeable. Therefore, the retail and wholesale definitions were both defined too narrowly.
- 5.47 One CP argued that separate markets should be defined for services delivered over copper, on the one hand, and for services delivered over fibre on the other. This CP also argued that the differences between AISBO and TISBO were not as stark as we presented in the January 2008 consultation and stated that CPs have tended (wherever viable) to switch to providing retail 155Mbit/s circuits using AI rather than TI interfaces, using the latter only where distance limitations prevent use of AISBO.
- 5.48 Three respondents considered that AISBO and TISBO markets would soon converge. One of those CPs noted that AI services do not currently appear to effectively limit price changes in TI services but it believed that a clear trend exists for customers to move from TI to AI services (and at an increasing rate). Another suggested that this development would accelerate as a number of services likely to become available on BT's 21CN platform would give OCPs a wide choice of potential products to which to migrate (from TI services) including equivalent (or near equivalent) 21CN TDM services, business-grade broadband and Ethernet services.
- 5.49 Another CP argued that its business arm would begin delivering leased lines services presented to customers as SDH/PDH (TISBO) but over Ethernet (AISBO) within 12 months. It suggested that this development would tend to point to an entirely technology neutral definition.
- 5.50 One respondent supported the AISBO / TISBO definition and argued that the technical differences that prevented customers switching at the retail level also exist at the wholesale level.
- 5.51 As with the retail market definitions, many respondents argued for wider markets, in particular including asymmetric broadband (ADSL) services. Some respondents suggested that a wider wholesale market consisting of SDSL, Ethernet in the First Mile, and ADSL should be defined, whilst some argued that an entirely separate business grade ADSL broadband market existed³².
- 5.52 In other cases, respondents considered a wider market consisting of wholesale leased lines and inputs into all other business connectivity services. For example, one respondent argued that the emergence of "Ethernet in the first mile" services would be likely to wholly replace SDSL and to a substantial extent replace 2 Mbit/s TISBOs. It believed that the business grade service wrap would enable it to provide a substitute for SDH-based leased lines services. The respondent further argued that

³² This latter question was addressed in Ofcom's wholesale broadband access market review which can be found at: <http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf>

this could reduce the demarcation between AI and TI services, such that these would now be in the same product market.

- 5.53 In response to the July 2008 consultation, another respondent expressed concern that BT's wholesale product portfolio has grown, now including 20CN and 21CN products. These products address access, backhaul and core requirements, and many combine two or three of these in one offering. It also noted that Ethernet services have now been fully launched and are developing fast. The respondent therefore questioned whether the proposed definitions were sufficiently forward-looking.

Ofcom's response

- 5.54 Ofcom does not agree with those CPs who argued that we should define a wider wholesale market than proposed in our January and July 2008 consultations (i.e. one that includes AISBO, TISBO and a number of other wholesale services in the same market). We consider that separate markets continue to exist for AISBO and TISBO markets. We also conclude that the wholesale product markets should not be defined any wider than this (e.g. to include asymmetric broadband origination). We set out below our further assessment of these issues in light of the comments we received to our consultation.
- 5.55 The principal arguments that CPs put forward against separate AISBO and TISBO largely mirror their arguments in relation to retail markets. For example, CPs pointed to evidence of migration from TISBO to AISBO services and argued that the technologies are largely now the same (or will be in the near future). However, some respondents agreed that AISBO and TISBO services were (currently) in separate markets. One argued that the technical differences that prevented customers switching at the retail level also exist at the wholesale level. One CP in particular noted that AI services do not currently appear to limit price changes in TI services effectively (although the CP thought that they would increasingly do so as migration increases).
- 5.56 As we discussed in Section 3, we believe that retail TI services have particular characteristics that cannot currently be delivered using AI technologies. Given that we conclude that separate AI and TI markets exist at the retail level this would mean that we would not put AISBO and TISBO wholesale inputs in the same market (based for example on an indirect constraint argument)³³. However, it is also necessary to consider whether a direct constraint might arise from, for example, switching to AISBO products to serve both retail AI and TI customers. We explain below why we have concluded that AISBO and TISBO services should be identified as separate product markets.

Assessment of direct constraints at the wholesale level

- 5.57 We note that some CPs suggested that they propose to deliver leased lines services presented to customers as SDH/PDH (TI) circuits using Ethernet (AISBO) inputs in the near future. In addition, one CP noted that wholesale services will become available on BT's 21CN platform and are likely to include TI-presented services provided over the underlying Ethernet-based infrastructure, as well as AI services.

³³ An indirect constraint could arise if the price increase (a SSNIP) on a wholesale input (TISBO) passed onto retail customers results in sufficient TI retail customers switching away from the retail product and so reducing wholesale demand to make the price rise at the wholesale level unprofitable.

- 5.58 This raises the possibility that direct substitution at the wholesale level between TISBO and AISBO services will emerge. Some retail customers may find that the retail TI services provided by a CP using Ethernet based wholesale services, but presented as TI services, are an acceptable substitute for TI services provided using SDH/PDH wholesale services. However, as discussed in Section 3 there appears to be a core of retail customers who still value the intrinsic properties of TDM-based technologies, which Ethernet-based services do not provide, even when presented as TI services.
- 5.59 We think that the fact that BT is continuing to offer access to native TDM services until 2014 suggests that there will be continuing demand for TISBO products to deliver retail TI services. In the coming years. This suggests that the characteristics of TDM cannot yet be fully replicated by AI services. Newer alternative technologies will not provide this core of customers with the underlying characteristics that they value.
- 5.60 We note that some CPs agree that this is currently the case but many also think this will soon change as AI technologies improve. However, no CP was able to provide firm evidence that they are able to supply TI customers on SDH/PDH with Ethernet replacements that still deliver the key characteristics of TDM-based services. But in the absence of clear evidence that this has occurred to an appreciable extent we think it would be premature to conclude that a single wholesale market exists.

Wider wholesale product markets

- 5.61 We discuss here the views of respondents that suggested alternative wholesale product market definitions. Respondents' proposed definitions could be loosely grouped into three broad areas:
- Separate wholesale markets for services provided using copper, on the one hand, and fibre, on the other;
 - A single business connectivity market incorporating leased lines and other connectivity services; or
 - In addition to separate AISBO and TISBO markets, a further distinct wholesale business connectivity market exists for "high-end" ADSL, SDSL and/or EFM.
- 5.62 We address the first bullet separately below before looking at the second and third bullets together (as these issues cover broadly similar product market definition issues).

Separate markets for copper-based and fibre-based services

- 5.63 We explain below why we think copper based and fibre based wholesale services are part of the same market. In the wholesale market, BT primarily relies on copper-based services to supply lower bandwidths (such as TISBO services below 2 Mbit/s). BT uses fibre for its higher bandwidth TISBO services and all current AISBO services. For product definition purposes, it is necessary to consider whether a hypothetical monopolist of one service (e.g. copper-based service) could impose a SSNIP without causing sufficient customers to switch to other products (demand-side substitution), or additional producers to begin supplying this product (supply-side substitution), to render this unprofitable. As with other wholesale definitions, these demand-side constraints may be either direct, with CPs currently using the wholesale

product switching to substitutes, or indirect, resulting from switching by customers for the downstream retail product.

- 5.64 As noted in Section 3, retail customers will in general be indifferent between a service provided over copper and an equivalent service provided over fibre. This is consistent with “technology-neutrality”, the idea that the underlying technology only matters to end users to the extent that it affects prices or quality of service. At low bandwidths the perceived differences are not significant and BT currently provides similar low-bandwidth TI services using both copper and fibre-based wholesale inputs. Indeed some 20% of BT’s 2Mbit/s circuits are provided over copper, and at the same prices as equivalent services provided over fibre, which does not support the identification of separate wholesale services for fibre-based or copper-based services.
- 5.65 Our conclusion is therefore that a copper and fibre-based wholesale product market definition is not appropriate.

Leased lines versus wider business connectivity markets

- 5.66 In Section 3, we discussed in detail our finding that AI and TI services are in separate markets and why we concluded that a wider set of retail business connectivity products are not in the same market. We consider here whether, at the wholesale level, AISBO and TISBO services are constrained by wider wholesale business connectivity services.
- 5.67 We have already concluded in Section 3 that asymmetric broadband and other business connectivity services are not in the same markets as retail traditional and AI leased lines. Therefore, as retail asymmetric broadband prices do not constrain retail leased line prices (to a sufficient degree to place both services in the same market), any indirect constraint on wholesale leased line prices arising from retail level switching to asymmetric broadband access cannot be strong enough to place the corresponding wholesale products in the same wholesale market. It is therefore only necessary to consider whether there are direct constraints at the wholesale level.
- 5.68 On the demand-side, a communication provider currently reliant on PPCs or Wholesale Extension Services would not substitute to using asymmetric wholesale broadband access products such as BT’s IPStream in response to a SSNIP. The asymmetric broadband access would not provide the capabilities of a PPC or Ethernet-based service.
- 5.69 Supply-side substitution might impose an additional constraint if a SSNIP imposed on AISBO or TISBO services would induce sufficient new entry into the market in a relatively short period. As we highlighted in our January 2008 consultation, many communication providers are already present in AI and TI markets as well as providing VPNs and broadband. Therefore, the competitive impact of these suppliers is already captured in the demand-side analysis and they do not impose an additional constraint via the threat of new entry. This means that supply-side substitution is not a relevant factor.
- 5.70 We therefore conclude that wholesale high-end ADSL is not in the same market as AISBO or TISBO.

3. Inclusion of other wholesale services in AISBO and TISBO markets

5.71 Those respondents that commented in this area presented views on the inclusion of LLU and RBS backhaul and microwave links in either the AISBO or TISBO markets. Others pointed to other services that should be considered in the AISBO market such as Wave Division Multiplexing (WDM), Ethernet in the first mile (EFM), and backhaul to the cabinet.

LLU backhaul

5.72 Two respondents did not agree with the inclusion of LLU backhaul within the AISBO market. One of these respondents argued for a separate LLU backhaul market pointing to the following factors:

- LLU backhaul is used for separate downstream/retail markets;
- There is zero demand-side substitution between LLU backhaul and other Ethernet products;
- LLU backhaul employs different parts of BT's network/assets; and
- Competitive conditions are significantly different.

5.73 On this basis, the respondents recommended the separate identification of an LLU backhaul market.

RBS backhaul

5.74 One MNO supported the inclusion of RBS backhaul in the same wholesale market as TISBO. One MNO also noted that it would begin to employ Ethernet services for their Radio Base Station backhaul in future.

Microwave links

5.75 Another MNO questioned the inclusion of microwave links in the TISBO market. It presented a number of points that it thought would tend to undermine the inclusion of microwave links within this market:

- i) while migrating to radio links might be beneficial in terms of saved operating costs, it thought that high capital outlays would act as a barrier to switching;
- ii) microwave links have engineering limitations and limited availability (e.g. line of sight restrictions, distance limits);
- iii) there are increased risks of bottlenecks and reduced reliability as network utilisation increases; and
- iv) there are limitations in bandwidths beyond 155Mbit/s.

5.76 Because of these factors, the MNO did not think it was appropriate to include microwave links as part of our market definition. BT on the other hand questioned in its response to the July 2008 consultation whether we had appropriately included all self-supplied radio links particularly for the 155 Mbit/s market.

WDM

- 5.77 Two respondents questioned the exclusion of WDM from our wholesale product market definition. One respondent did not agree that such services should be excluded on the basis of bandwidth breaks or based on the functionality of WDM. Both respondents highlighted the use of WDM as an input to many of the wholesale circuits within this market. One of the above respondents argued that if WDM circuits were outside the scope of the business connectivity review then they would need to be reviewed as part of the proposed dark fibre review.

Backhaul to the cabinet

- 5.78 One CP argued that although CPs are yet to deploy backhaul to the cabinet³⁴ it should be included in the same relevant market as LLU backhaul. It suggested that Ofcom provide clarity that this would be the case.

Ofcom's response

- 5.79 We comment below on the inclusion of LLU and RBS backhaul and microwave links in either the AISBO or TISBO markets. In addition, we consider the arguments CPs put forward in support of the inclusion of other services such as Wave Division Multiplexing (WDM), Ethernet in the first mile and backhaul to the cabinet within the AISBO or TISBO markets.

LLU backhaul

- 5.80 For the reasons set out below, we do not think that the available evidence points to the identification of LLU backhaul as a market separate from other AISBO services. We consider in turn each of the arguments presented by respondents.

LLU backhaul addresses a separate retail markets

- 5.81 One respondent argued that, as LLU backhaul and AISBO serve different downstream retail markets, they should be regarded as falling in separate wholesale market. However, our view is that wholesale inputs which are used to support different retail markets do not necessarily fall within separate wholesale markets.
- 5.82 In general, there may be a number of reasons to regard two wholesale products as part of a single market. These include direct demand-side substitution at the wholesale level, indirect demand-side substitution via the impact of wholesale price increases on retail prices and retail demand, supply-side substitution, the existence of a common pricing constraint and homogeneity of competitive conditions. Of these, only one, indirect demand-side substitution via the retail level is ruled out if the two products serve distinct retail markets. It is clear therefore that, in the specific case of LLU backhaul and AISBO, it is possible for them to be part of a single market if any of the other reasons (direct wholesale level substitution, etc) apply. These are discussed below.

LLU backhaul uses different network components

- 5.83 Some respondents argued that LLU backhaul and dedicated Ethernet connectivity services would employ different parts of BT's network/assets and should therefore be

³⁴ Backhaul to the cabinet would involve providing a connection between a CP's network POC and one of BT's street cabinet for the purpose of backhauling broadband traffic.

regarded as separate markets. Clearly, differences exist between dedicated Ethernet services such as WES, which run from an end-user's premises to a CP's point of handover, and LLU backhaul, which would start at a CP's co-location facility. These differences suggest that LLU backhaul links are not demand-side substitutes for AISBO because they do not include a local end. Similarly, a WES service is not a demand-side substitute for LLU backhaul links because it offers a local end that is not needed and that still has to be paid for (and this is a reasonably significant cost component for a WES service). Therefore, demand-side substitution between a WES product and a wholesale input used for LLU backhaul from a CP's co-location facility would be unlikely.

LLU backhaul faces different competitive conditions

- 5.84 Some respondents also argued that the competitive conditions were significantly different between LLU backhaul and other AISBO markets.
- 5.85 We believe that there is likely to be significant similarity of competitive conditions in the supply of Ethernet-based LLU backhaul links and AISBO. The similarity arises because the same technology is involved in providing transparent transmission technology between an operator's POC and a point in the local access network. This similarity means that the same type of entry barriers and economies of scale and scope are faced, especially those relating to digging and ducting.
- 5.86 In addition, the available evidence suggests that competitive conditions do not differ significantly between LLU backhaul and other low bandwidth AISBO services. For example, our information is that competitive provision of LLU backhaul (i.e. other than using BT's network) amounts to no more than 20% of the total. We estimate that BT's share of the low bandwidth AISBO market was around 73% as of December 2006. The similarity of market shares, together with similarity of entry and cost conditions, suggests that the competitive conditions between LLU backhaul and other AISBO markets are similar.
- 5.87 We therefore conclude that the AISBO market includes LLU backhaul demand.

RBS backhaul

- 5.88 Respondents that commented supported the inclusion of RBS backhaul within the TISBO market and we therefore conclude that this definition is appropriate. The issues that we consider below relate to the possible use of Ethernet for mobile network connectivity and the inclusion of radio links.

Ethernet backhaul

- 5.89 Some MNOs have highlighted to us that they will have a continuing requirement for TI services, but might also begin purchasing Ethernet backhaul as well. The precise timing and magnitude of MNOs' demand for Ethernet backhaul is unknown. But, in the absence of further information, we think that Ethernet-based RBS backhaul is likely to bear the same relation to other Ethernet services as (TI) RBS backhaul does to PPCs. As such any requirement for Ethernet-based backhaul would be likely to fall within the appropriate AISBO market.

Radio links

- 5.90 In the January 2008 consultation, we examined microwave connectivity (which MNOs either purchase from third parties or self-supply). We considered whether this

connectivity was potentially being used as an alternative to TISBO services. Our proposal was to include radio links in the TISBO market.

- 5.91 We note MNOs' comments regarding the ability to switch easily from a TISBO due to high initial capital costs and the comments from some MNOs that this service often has a limited availability or range. But where they are available (and suitable) they do impose a degree of competitive constraint on TISBO services. For example, when MNOs construct their networks using wholesale inputs there is a choice of using microwave links in certain localities.
- 5.92 Respondents raised a range of issues that suggested that the evidence on the inclusion of microwave links is potentially not as clear cut as we suggested in our January 2008 consultation. But in formulating our views in the January 2008 consultation, we held discussions with microwave providers, such as MLL, which suggested that it seeks to compete for niche parts of the leased lines market where these services operate most effectively. In addition, microwave, copper and fibre are all underlying inputs which are upstream of the wholesale markets we are assessing. We have taken the approach in this market review that it is the underlying demand for the characteristics of the product which informs market definition rather than the technology used. In some cases, it is therefore possible to switch between TISBO services provided using different technologies.
- 5.93 We discuss in our market power assessment the effect that the inclusion of microwave RBS links would have on BT's market shares. The analysis there suggests that it is not crucial to our finding of SMP to conclude on whether or not microwave links should be included in the TISBO market. However, for the purpose of ensuring we have appropriately assessed market power and that we have assessed all possible competitive constraints, we have included them in our market definition. But as we discuss later in Section 7, the possible limitations on the use of radio links suggest that there are limits to the competitive constraint that this form of connectivity might impose. We have also taken this into account in our market power assessment.
- 5.94 We have therefore concluded that it is appropriate to include RBS backhaul within the TISBO market. To the extent that MNOs use radio links to provide backhaul, these have also been included in our market power assessment.

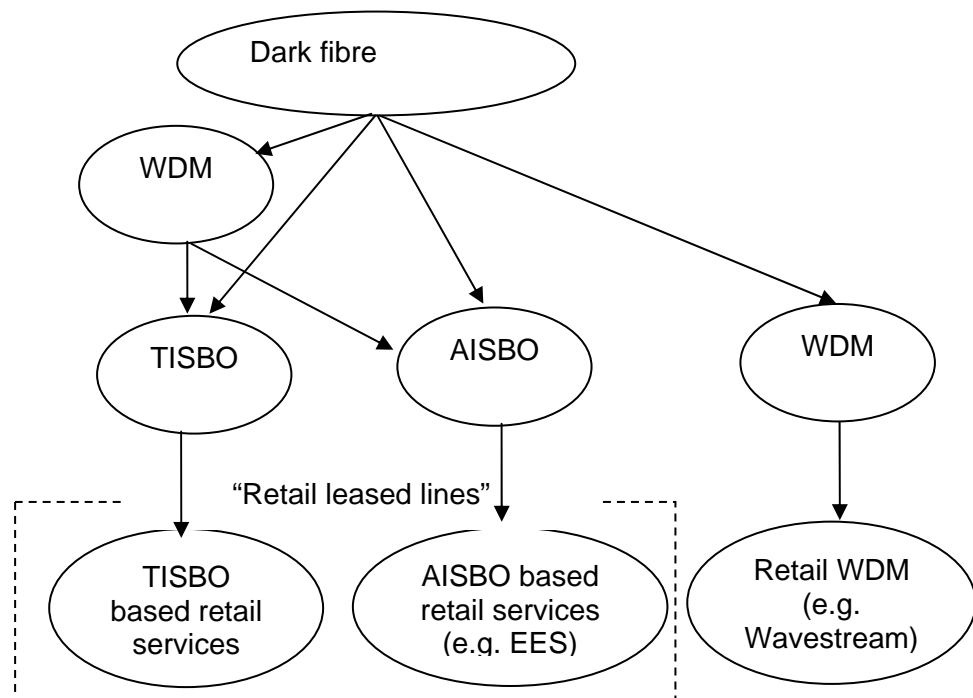
Ethernet in the First Mile

- 5.95 Some respondents pointed to Ethernet over copper / Ethernet in the first mile services (EFM) as providing a competitive constraint on leased lines (potentially both AISBO and TISBO). Therefore, we have considered the implication of EFM services for our wholesale AISBO and TISBO definitions.
- 5.96 At the retail level, EFM is used to deliver Ethernet at low bandwidth to businesses with similar functionality to low bandwidth Ethernet leased lines. As such it cannot be considered as a separate emerging market from the current low bandwidth retail AI market, but rather is a different way of providing a retail AI service.
- 5.97 The wholesale inputs used to deliver an EFM-based retail Ethernet service are based on multiple copper pairs (bonded copper) access lines. Copper access lines are available to all CPs due to the requirement on BT to provide unbundled local loops at cost-oriented price (which is a remedy arising from BT's SMP in the wholesale local access market).

- 5.98 The only real difference between EFM-based retail Ethernet and other low bandwidth AI services is the use of copper in the access segment (and corresponding lower costs of using existing copper access rather than new fibre). This is similar to the TI markets, where copper is typically used at lower bandwidths (below 2Mbit/s) and fibre at 2Mbit/s and above. And as noted earlier, we do not believe it would be appropriate to define separate markets on the basis of whether the service is provided over fibre or copper.
- 5.99 Therefore, in the same way as we have not identified an explicit distinction between TISBO services provided over copper and similar TISBO services provided over fibre, we do not propose to distinguish EFM from other AISBO services. The implications of EFM are discussed further in Section 8 which sets out the regulatory obligations which Ofcom intends to place on BT in markets where it has SMP.

Wave Division Multiplexing

- 5.100 Some respondents were concerned that we did not find WDM in the same market as other wholesale leased lines services.
- 5.101 As discussed in Section 3, we have concluded that it is not appropriate to include WDM in retail AI or TI markets. This is based on the specialised nature of this service, in particular its ability to offer highly scalable and flexible bandwidth. Given this finding at the retail level, we have not reviewed the use of WDM as an input into retail WDM services in our wholesale market assessment.
- 5.102 This does not mean however that we have ignored wholesale services that use WDM as an upstream input. WDM is a highly efficient transmission technology that is used to support the backhaul element of AISBO and TISBO services and core links. But as we stated in our 2003/04 Review, the WDM element of the service is an upstream characteristic of the wholesale AISBO/TISBO products described above. It can be used as an input into different products that are in distinct (downstream) economic markets as shown in the figure below.

Figure 5.1: Relationship between wholesale leased lines and upstream inputs

- 5.103 As such, we have not treated WDM as a separate wholesale leased line product market as it is upstream of the markets considered by this market review. It also falls outside the scope of the European Commission's list of recommended markets.
- 5.104 Related to this point, one respondent suggested that if we were to consider a dark fibre market review, it would be relevant to consider WDM access at the same time. We discuss the issues regarding a possible dark fibre market review at the end of Section 8. The relevance of this comment is that it supports the view above that services such as WDM are upstream of the leased lines markets.
- 5.105 Our conclusion is therefore that WDM falls outside the scope of the wholesale services relevant to AISBO and TISBO markets.

Backhaul to the cabinet

- 5.106 As we stated in the January 2008 consultation, LLU backhaul – which we have concluded above should fall within the AISBO market – connects a CP's co-location facility to its relevant point of handover. Presently most CPs have their co-location equipment at BT local exchanges. However, our LLU backhaul definition would include co-location at a point closer to the end-user, including at the street cabinet level. Similarly, the definition could include co-location at a point more distant from the end-user.

4. Separate wholesale trunk market

- 5.107 Most CPs that commented on this issue supported the definition of the trunk market, and its boundary with TISBO markets, using the concept of aggregation nodes as Ofcom had proposed. Two other CPs generally supported the proposal though they thought that there was a need to assess the potential impact of the re-classification of some trunk circuits as terminating segments.

- 5.108 One CP requested clarity in respect of how the market definition would actually work. In particular, it wanted to understand how circuits between Tier 1 nodes would be either classified as trunk or terminating segments. Some CPs also requested further clarity in respect of where the precise boundary between AISBO and any corresponding trunk market would sit
- 5.109 BT did not believe that the links between Tier 1 nodes within main urban/business areas e.g. London should always be deemed as “origination”. BT highlighted that in such areas, the aggregation opportunities are themselves very large and infrastructure competition has been established. In these circumstances, BT should not have any obligations to provide connectivity.

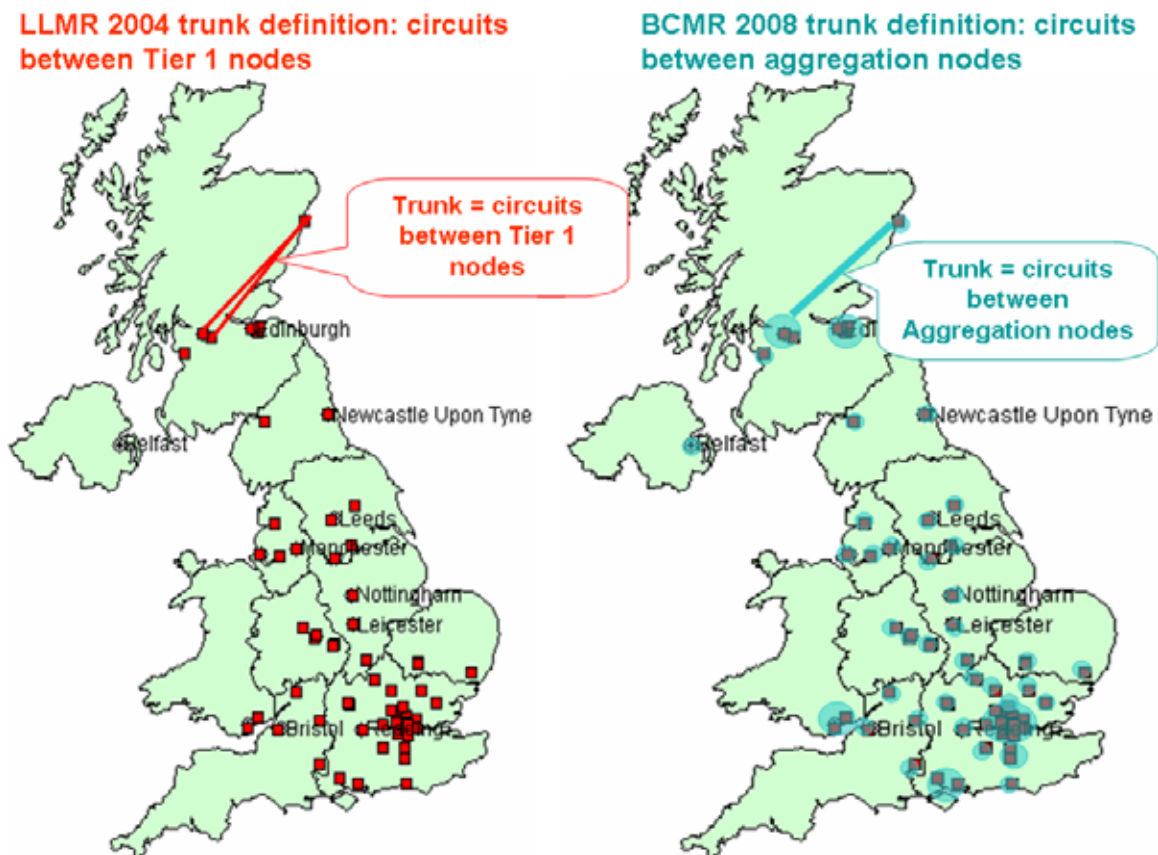
Ofcom’s response

- 5.110 One CP requested further clarity on our revised SDH/PDH trunk definition, which, in the January 2008 consultation we defined trunk as circuits between aggregation nodes. We have set out below a further description of what the revised proposals mean in terms of the classification of circuits as either trunk or terminating segments. We then assess CPs and BT’s concerns over the possible impact of the revised proposals. Finally, we discuss CPs’ request for further clarity over the AISBO market definition.

Clarification of trunk market definition

- 5.111 In the 2003/04 Review, we defined trunk circuits as those between any of BT’s Tier 1 nodes (or the relevant equivalent on OCPs’ networks). In Figure 5.2 below, we show the location of BT’s Tier 1 nodes on the left-hand map. Based on the 2003/04 Review trunk definition (i.e. circuits between Tier 1 nodes), we also show two possible trunk routes. Because there are two Tier 1 nodes serving Glasgow (the “Glasgow” Tier 1 node and the “Clyde” Tier 1 node) and a Tier 1 node in Aberdeen, we show two possible trunk routes, one from Aberdeen to the Glasgow node and another from Aberdeen to the Clyde node.

Figure 5.2: Network map showing BT's Tier 1 nodes



Source: Ofcom, November 2008

- 5.112 In the January 2008 consultation, we proposed to narrow the scope of the trunk definition by defining trunk circuits as those between a smaller number of so-called “aggregation nodes”. We identified 40 such aggregation nodes, which are shown in the right-hand side of Figure 5.2 above.
- 5.113 As part of these proposals, each of BT's Tier 1 nodes was mapped to one of these aggregation nodes. In effect, we grouped together Tier 1 nodes serving the same urban centre (so for example Glasgow and Clyde Tier 1 nodes fell within a single Glasgow aggregation node). As explained above, the aggregation nodes concept was intended to reflect the fact that CPs have built their core/trunk networks to serve major population centres/business districts. These aggregation nodes represent those areas where CPs have sufficient aggregation opportunities to make it worthwhile to locate key interconnect points.
- 5.114 Under the proposed market definition, only circuits between aggregation nodes would be classified as trunk. Hence, in our example, there would now be a single trunk route linking Aberdeen to the Glasgow area (as shown in Figure 5.2 above).

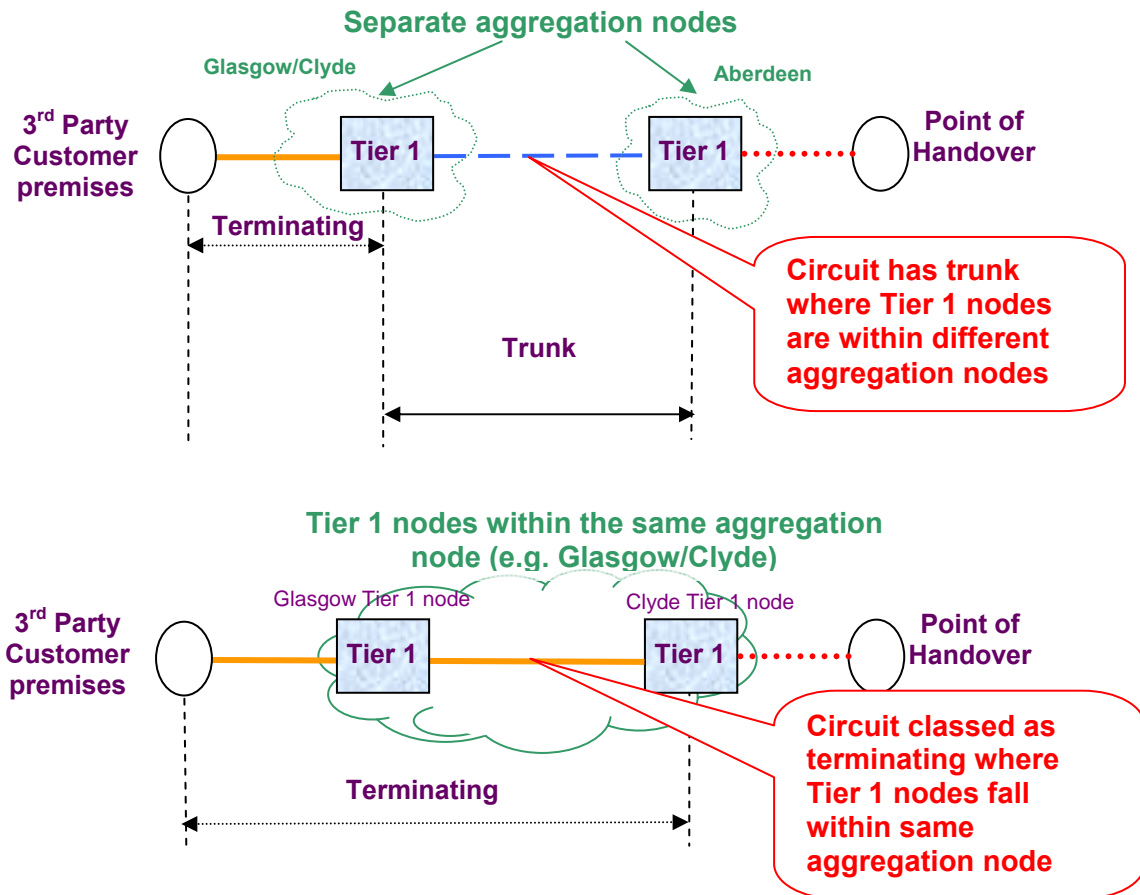
Implications of the revised trunk definition for circuits between Tier 1 nodes

- 5.115 On BT's network, a trunk circuit will still always connect two different Tier 1 nodes.³⁵ But unlike our previous definition, some circuits linking Tier 1 nodes will not be

³⁵ This would be based on BT's existing logical routing model. Each postcode in the UK is parented to a particular Tier 1 node. And therefore each Tier 1 node has a catchment area associated with it (consisting of all postal sectors parented to that node). Therefore, if BT sells a wholesale circuit spanning two catchment areas, the circuit

classified as trunk. The additional condition for a circuit to be regarded as a trunk circuit is that the Tier 1 nodes through which the circuit passes should be in separate aggregation nodes. If the circuit passes through different Tier 1 nodes but they are in the same aggregation node, this circuit would be classed as a terminating segment. We show this diagrammatically in Figure 5.3 below.

Figure 5.3: Description of revised trunk market definition



is deemed to be routed via the respective parent Tier 1 nodes each postal sector is parented to. On the other hand, circuits within the same catchment area would be parented to the same Tier 1 node and therefore the logical routing of that circuit would not be deemed to contain a segment between different Tier 1 nodes.

Source: Ofcom, November 2008

- 5.116 The revised definition of trunk means that we would now class any BT circuit between Tier 1 nodes that fall within the same aggregation node as a terminating segment. The lower part of the above figure shows two Tier 1 nodes falling in the same aggregation node. For example, we identified in the January 2008 consultation a Glasgow aggregation node, which would capture two of BT's Tier 1 nodes: the "Glasgow" and "Clyde" Tier 1 nodes. Figure 5.3 above shows that we would now classify a circuit between these two Tier 1 nodes as a terminating segment.
- 5.117 Therefore, if a CP wanted to supply an end-user served by BT's Glasgow Tier 1 node and the CP's Point of Handover (POH) was at the Clyde node, the circuit from the end-user to the POH would no longer contain a trunk element. Instead, we would now class the circuit as a terminating segment from the end-user to its Point of Handover. Previously, this circuit would have included a terminating segment from the end user to the nearest Tier 1 node (i.e. "Glasgow") and a trunk segment from the Glasgow Tier 1 node to the Clyde Tier 1 node at which the CP is interconnected.
- 5.118 In Annex 7 we list the final set of aggregation nodes (based on our conclusions in Section 6) and show how each of BT's Tier 1 nodes maps onto one of these aggregation nodes. Hence, if a CP purchases a circuit and part of that circuit is between Tier 1 nodes, it will be possible to assess whether these Tier 1 nodes fall within the same aggregation node or in separate aggregation nodes and therefore whether that circuit would continue to be classified containing a trunk element.

Concerns over trunk definition on market power assessment and regulatory remedies

- 5.119 Respondents' main comment on the substance of our proposed revised trunk definition concerned the impact on their existing circuits of the potential re-classification of trunk and terminating segments. We think that any impact assessment is more relevant to our remedies stage. For example, in our assessment of remedies it is appropriate to take account of the potential impact of our proposed product market definition on existing and prospective wholesale customers (including their purchases of BT's PPCs). But the key question in the first instance is whether we think that we have identified the correct boundary between terminating and trunk markets for the purpose of assessing competitive conditions in relevant markets.
- 5.120 As we explained in our January 2008 consultation, we think that the boundary that we have identified between aggregation nodes is appropriate. The consolidated list of "aggregation nodes" reflects where the main CPs have rolled-out their network. There is limited prospect for them to interconnect at all Tier 1 nodes given the economies of scale available to CPs at those locations. It is therefore more likely to be reflective of the location of key bottlenecks and better captures the likely difference in competitive conditions between trunk and terminating markets. Hence, we think our market definition approach is more appropriate for assessing SMP in trunk and terminating segments.
- 5.121 BT did not believe that we should class all of the links between aggregation nodes in main urban/business areas as "origination" (SBO). This comment appears to stem from two main concerns: first, that there may be more than one "aggregation node" within a particular urban area; and second that we should avoid a definition of trunk and TISBO that always identified the origination element as a bottleneck (i.e. with limited prospect for sustainable competition).
- 5.122 In relation to the first of these concerns, we note that in the January 2008 consultation we identified only one aggregation node for the London area. Based on

BT's concerns we have considered later in Section 6 whether it is appropriate to identify more than one "aggregation node" for the London area.

- 5.123 On the second point, even if we were to identify all circuits within London as origination, we agree that this should not rule out the possibility that certain TISBO markets could be found to be competitive (in some geographic areas or at some bandwidths). Indeed, in the January and July 2008 consultations, our geographic market assessment proposed to find a competitive local market for the high bandwidth and very high bandwidth 155 Mbit/s TISBO services within the London area. Therefore, we do not necessarily see that the identification of separate trunk and SBO markets means that we will not find some variations in competitive conditions in some parts of the latter markets.

Defining the scope of the AISBO markets

- 5.124 We note that some CPs have also requested further clarity in respect of where the precise boundary between AISBO and any corresponding trunk market would sit. Strictly speaking, it was not necessary to provide a definitive conclusion for the purposes of market definition and our subsequent SMP assessment. This is because BT does not currently provide any AI trunk circuits. Going forward, we also considered that the precise timing of the development of core connectivity for AI markets remained highly uncertain. Hence, for the purpose of the market definition and market share analysis, in the January 2008 consultation, we did not seek to define an explicit boundary between AISBO and AI trunk markets.

- 5.125 However, having found SMP on low bandwidth AISBO services, we are seeking to impose regulatory remedies on those services. We therefore still need to clarify the precise scope of BT's AISBO obligations. Some AI trunk products could emerge in the timeframe of the review (although this is by no means certain), so the AISBO market needs to be defined in a way that makes the boundary clear between regulated (terminating segments) and unregulated markets.

- 5.126 We think that we could best frame these obligations in terms of where the AISBO obligation ends (which, by definition would also highlight where a trunk service would begin). As with the assessment of TISBO and SDH trunk markets, this analysis has an inherent geographic element, so we have included our discussion of this issue in Section 6.

Conclusions

- 5.127 In summary in the case of both the AISBO and TISBO markets, we think that the relevant basis for identifying the break between trunk and terminating segments should not rely solely on the location of BT's choice of network nodes (i.e. its Tier 1 or metronodes). In both cases, we think that the "aggregation nodes" concept provides a more appropriate basis for identifying the break. We therefore discuss in Section 6 our final proposals in respect of aggregation nodes for the TISBO and SDH/PDH trunk market and, on a similar basis, the proposed scope of the AISBO market.

5. Trunk versus alternative forms of conveyance

- 5.128 There were no comments in this area.

Ofcom's response

5.129 As no respondents provided further evidence, in response to the January and July 2008 consultations, to support an alternative trunk definition, we have concluded that it is appropriate to define a market for SDH/PDH trunk services, distinct from other forms of conveyance services. As stated in our January 2008 consultation, this is based on a range of factors:

- **Technical barriers:** we consider that technical features of TDM-based transmission suggests that OCPs could not easily switch to alternative NGN/conveyance networks as a substitute even where they have spare capacity present. Indeed, going forward, BT will continue to support a product on its 21CN, which offers “native” TDM services suggesting distinct demand for this form of network connectivity that a number of retail customers will continue to value.
- **Other barriers to switching:** there are still various issues with interconnection that create further barriers to switching (for example, different interconnection locations may exist for different technologies; requirements for additional interconnection equipment to support SDH transmission). As such, if a hypothetical monopolist were to impose a SSNIP on trunk segments, it is unlikely that sufficient switching would occur to yield that SSNIP unprofitable.
- **Evidence on OCPs' use of core capacity:** The way in which OCPs are currently able to use their own core networks does not suggest that it is easily substitutable for SDH/PDH trunk. As we discuss under the SMP assessment in Section [x], while OCPs may have core network capacity, our assessment of BT's shares of trunk routes suggests that OCPs are not using these networks to provide SDH/PDH trunk to the extent that might be expected by the network presence of some OCPs.
- **Lack of indirect constraints:** as TI services reliant on SDH/PDH trunk are in a separate market to other retail business connectivity services we consider indirect constraints would not be applicable.

Conclusions

5.130 Based on the above assessment, as discussed in more detail in paragraphs 5.133-5.188 of the January 2008 consultation, we therefore conclude that it is appropriate to define separate markets for SDH/PDH-trunk and broadband conveyance.

6. Bandwidth breaks

5.131 Some CPs were concerned that we had conducted limited analysis of the way in which retail bandwidth breaks might map onto wholesale markets. One respondent suggested that there was no assessment of whether the wholesale competitive conditions reflect the breaks we proposed at the retail level.

TISBO bandwidth breaks

5.132 BT agreed with our proposed TISBO market breaks in our January 2008 consultation but did not agree with the proposed identification of an additional break in the market between 155 Mbit/s circuits and 622 Mbit/s circuits in our July 2008 consultation. It questioned whether the distinction between retail leased lines bandwidth markets would necessarily read across to wholesale bandwidths and argued that competitive

conditions in the provision of 155 Mbit/s and 622 Mbit/s TISBO were similar. It also questioned the wholesale market share data we used to determine that competitive conditions varied between the very high bandwidth markets.

5.133 A number of other CPs and MNOs agreed that a break in the markets for very high bandwidth TISBO services exists. They argued that they were still reliant on BT for 155 Mbit/s circuits in many parts of the country and therefore that competitive conditions varied relative to 622 Mbit/s.

5.134 Many CPs however expressed more general concerns in response to the January 2008 consultation over the use of wholesale pricing/cost data to inform market definition. Two respondents argued that the differences between wholesale and retail demand characteristics might suggest different bandwidth splits.

AISBO bandwidth breaks

5.135 Two respondents agreed with the proposed identification of a high bandwidth AISBO market. Seven respondents to the January 2008 consultation did not agree that there is a separate market for circuits in excess of 1Gbit/s. Two of those made similar comments in their response to the July 2008 consultation. In summary, there was a range of factors that CPs identified, which they suggested would not support a separate high bandwidth AISBO market. Most of these are discussed above in Section 3 as they are also relevant to retail market definition. However, they are set out again below for ease of reference and completeness:

- i) **Supply-side synergies:** both low and high bandwidth AISBO services will employ the same fibre. As fibre represents circa 60% of the costs base for circuits in excess of 1 Gbit/s, BT would be able to leverage these synergies between the two markets. One CP highlighted, for example, that if a Hypothetical Monopolist tried to impose a price increase in the low bandwidth market, suppliers of high bandwidths would be able to enter the market using existing fibre assets;
- ii) **Costs of different bandwidths:** some CPs noted that the analysis was based on current BT cost data, however, equipment prices that drive the differences in bandwidth costs are expected to fall faster than the cost of ducting and fibre. This will increase the level of demand-side substitution;
- iii) **BT's ability to price services well above costs:** the fact that cost differences are much smaller than price differences for different bandwidth AISBO services suggests that BT can apply value-based pricing. This suggests that all circuits are in the same market;
- iv) **Size of high bandwidth AISBO market:** some CPs argued that the size of the high bandwidth market did not warrant a separate market as the consumption of circuits in excess of 1 Gbit/s has not yet increased to a significant level. Some CPs also suggested that the size of the market is small (possibly to the degree of being statistically insignificant) and therefore circuit sales would not be a good indicator of future competitive conditions;
- v) **Competitive conditions becoming more homogenous:** some CPs argued that the current view of competitive condition was not sufficiently forward looking. Some CPs highlighted that there is likely to be significant growth in demand for circuits above 1 Gbit/s services, including from LLU backhaul operators. As the

market demand develops outside of London, BT will be able to leverage market power between different bandwidths as it will have greater fibre coverage; and

- vi) **Development of ORCHID-based platform:** some CPs highlighted that BT's deployment of its ORCHID platform would erode differences between different bandwidths. One respondent referred to the January 2008 consultation, where we stated that "the incremental costs of providing additional bandwidth [over the ORCHID platform] will not vary significantly". Given this uncertainty, CPs highlighted that it would be the wrong time to change the market definition.

Trunk

- 5.136 Only BT commented on the proposal to define a single trunk market including all bandwidths. It suggested this would lead to a counter-intuitive outcome in terms of possible remedies. BT referred to a CP purchasing, for instance, a PPC requiring a trunk element from BT. BT argued that at certain bandwidths (i.e. at 622 Mbit/s) a terminating segment could be free from regulation but 622 Mbit/s trunk segments would still be priced on regulated terms. And if alternative providers could supply the terminating segments competitively then CPs should be able to provision the trunk segment competitively. BT therefore suggested a break in the market reflecting variations in competitive conditions for trunk.

Ofcom's response

- 5.137 Respondents to our two consultation documents made a number of points related to the identification of markets according to bandwidth. The main points were as follows:
- i) Some OCPs were concerned that we did not provide sufficient evidence to justify the use of the bandwidth breaks seen in retail markets to inform the bandwidth breaks for AISBO and TISBO markets;
 - ii) In response to the January consultative document, a number of CPs disagreed with our proposal to define a single very high bandwidth TISBO market including circuits at all bandwidths over 45Mbit/s. CPs generally supported the revised proposals, set out in our July 2008 consultation document, to identify separate markets for very high bandwidth TISBO circuits at bandwidths up to and including 155Mbit/s and at bandwidths over 155Mbit/s. By contrast, BT supported the identification of a single very high bandwidth TISBO market (including 155Mbit/s and 622Mbit/s) at the wholesale level;
 - iii) Some CPs were also concerned about the identification of a separate high bandwidth market for AISBO, arguing that a single market should be defined for AISBO circuits at all bandwidths;
 - iv) BT considered that it was appropriate to identify a separate market for trunk circuits for higher bandwidths.

- 5.138 We consider the bandwidth issues for symmetric broadband origination markets and trunk in turn below.

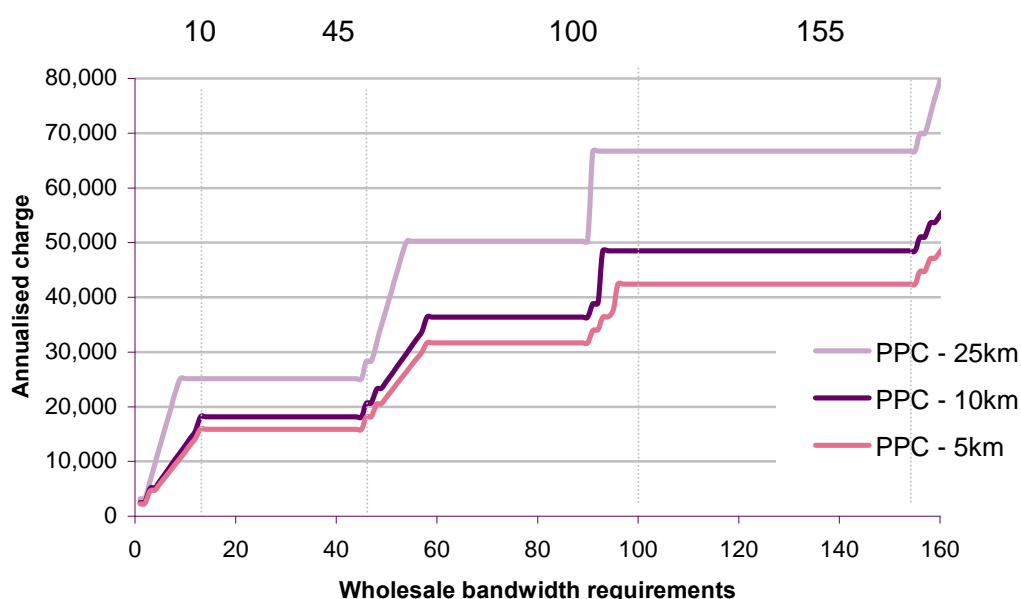
Mapping retail bandwidth breaks onto AISBO and TISBO markets

- 5.139 We explain our reasons for reflecting retail market definition in our definition of wholesale market above, in paragraph 5.3. However, in light of the comments

received on this issue, we re-assessed our proposals for TISBO markets in our July 2008 consultation. In particular, we updated and modified the retail pricing analysis presented in the January 2008 consultation³⁶.

5.140 As described above, our approach to identifying bandwidth breaks is based on identifying the combination of circuits of various bandwidths that would provide the cheapest way of delivering a particular total bandwidth requirement. The key difference in the revised analysis is that it is based only on a consideration of TISBO charges, that is, we have excluded any trunk circuit costs which had been included in the earlier analysis of retail circuits (for which end-to-end costs are relevant³⁷). The results of the updated analysis are shown in Figure 5.4 below.

Figure 5.4: Comparison of Wholesale input prices



Source: Ofcom, July 2008

5.141 The figure shows for different distance circuits (from 5km to 25km) the service based price (rental plus annualised connection charge) of providing a particular bandwidth requirements. The horizontal segments indicate where the cheapest way of obtaining the desired bandwidth is by purchasing a single circuit of a higher bandwidth, whilst the upward-sloping parts show where multiples of lower bandwidth circuits are cheaper. For example, a communication provider requiring bandwidth of between about 15Mbit/s and 45 Mbit/s would generally find it economic to use a 34/45 Mbit/s circuit rather than multiple 2Mbit/s circuits.

5.142 The updated analysis confirms the existence of a bandwidth break between 34/45 and 155 Mbit/s TISBO. This is because there are relatively large, near vertical “steps” between the different bandwidths, rather than a smooth curve. These indicate that the range of customer bandwidth requirements over which a customer might switch

³⁶ page 83 figure 15.

³⁷ For purpose of retail market definition, it is clearly relevant to include all wholesale inputs that go into providing that service, taking account of how these costs might vary by bandwidth. Hence, to supply a retail customer we need to understand the likely costs of trunk and terminating segments that would be used to link the retail customer’s sites.

between circuits of different bandwidths in response to a SSNIP is relatively limited. The figure suggests that it would generally be most efficient to seek to use a 155 Mbit/s circuit to serve bandwidth demand above 100 Mbit/s. Similarly, 34/45 (or multiples thereof) is only efficient just below 100 Mbit/s.

- 5.143 The above analysis therefore confirms that the breaks that we identified from our analysis of retail markets are also found in wholesale TISBO markets. Break points are identified at bandwidths of 2; 34/45 and 155 Mbit/s. The fact this supports the analysis based on retail circuits is to be expected since trunk costs, which are excluded from the revised analysis, show less variation with bandwidth than TISBO costs.
- 5.144 We were not able to compare the price of 155 Mbit/s versus 622 Mbit/s in the above figure. This is because BT does not publish wholesale prices for 622 Mbit/s circuits. But generally, it appears that retail market definitions map quite well onto our wholesale definitions.

AISBO markets

- 5.145 The price analysis used to support our assessment of bandwidth breaks in retail AI markets did not include any trunk costs (as retail AI circuits do not include trunk segments). It is therefore applicable to the wholesale AISBO market. Ofcom's reasons for identifying separate retail markets for high and low bandwidth circuits are set out in the Section 3. In this Section however we report the results of an updated analysis of costs by bandwidth.
- 5.146 We have repeated the analysis in Section 3, with the most up to date information on equipment cost differences. This confirms the analysis in our January 2008 consultation regarding the current relative differences in the prices of different bandwidth AISBO services. Our assessment also confirms that the current cost difference can be expected to hold for the time horizon of the review, that is, over the next 3-4 years.
- 5.147 However, we noted that given the relatively large element of costs which are common to circuits of different bandwidths, it was not entirely clear whether we could determine an appropriate "competitive price" benchmark for the relevant retail market bandwidths we were comparing since this would depend on the way BT chose to recover common costs. As discussed in paragraphs 3.339 to 3.341 of the January 2008 consultation, if the basis for considering market definition is a "competitive price" benchmark derived on the basis of cost allocation decisions, which are in turn based on an assessment of competitive conditions in that market then this becomes a rather circular process. Instead, it may be preferable (where common costs tend to dominate) to move directly to a consideration of homogeneity of competitive conditions across bandwidths.
- 5.148 We discuss below our analysis of variations in competitive conditions. We have presented this both for our AISBO and TISBO markets.

Analysis of variations in competitive conditions

- 5.149 Even where circuits of different bandwidths are not demand- or supply-side substitutes, we may still regard particular bandwidth circuits as being part of the same market if the competition conditions of the bandwidths being compared are sufficiently homogenous. We explain below that, taking account of the available price

and cost evidence as well as looking into the evidence of competitive conditions, we consider that we have appropriately identified relevant breaks in the market.

TISBO markets

- 5.150 Our assessment of competitive conditions in Section 7 lends support to the breaks we identified for TISBO markets. In particular, as discussed in our July 2008 consultation, the evidence suggests that competitive conditions in the supply of 155 Mbit/s (at least outside the Central and East London Area (CELA)) and 622 Mbit/s lines differ significantly. One reason for this difference is that the revenue available from even a single 622 Mbit/s makes it more likely that it will be economic for a competing operator to supply a 622 Mbit/s circuit than a 155 Mbit/s circuit. The deterrent effect of sunk costs on potential entry is likely to be more significant in the latter market.
- 5.151 This is reflected in the further evidence that OCPs have provided on their limited ability to provide 155 Mbit/s circuits and the extent of self-supply on 622 Mbit/s circuits, and in market shares at the wholesale level. BT appears to have around 7% of 622 Mbit/s TISBO sales, but around 56% of 155 Mbit/s TISBO in the UK excluding the Hull area and the CELA. This result does not seem to be explained by 'small number' issues because significant quantities of both lines are supplied.
- 5.152 In respect of lower bandwidth markets, there is strong evidence that circuits up to and including 2Mbit/s face different competitive conditions to higher bandwidth markets. In particular, we estimate that BT has a very high share of the TISBO market (89%).
- 5.153 The only market where competitive conditions are potentially quite similar is in relation to 34/45 Mbit/s and 155 Mbit/s markets. Indeed, we found both markets were competitive in the CELA (BT having 20% and 17% shares at the different bandwidths) and uncompetitive in the rest of the UK (excluding the Hull area). However, our price and cost analysis does not support the inclusion of 155 Mbit/s in the same market as 34/45 Mbit/s. We have therefore concluded that a separate market exists for 34/45 Mbit/s and 155 Mbit/s.

AISBO markets

- 5.154 In respect of the AISBO market, the analysis of current competitive conditions tends to support our proposed finding of separate markets at low bandwidth and high bandwidths. Ofcom's calculations suggested that BT's share of the wholesale high bandwidth AISBO market was 26%, compared to 73% for low bandwidth AISBO, reflecting the much greater investment in competing infrastructures that has taken place in the high bandwidth market.
- 5.155 Some respondents expressed concern with the above market share data. In particular, given the fast pace of growth of the AISBO markets, they suggested that BT's shares in the high bandwidth AISBO market may have grown to an appreciable extent, such that the variations in competitive conditions between low and high bandwidth markets are not so clear. We have considered this issue in more detail in Section 3. In summary, our analysis of the available data suggests that we have not seen significant changes in BT's market shares and the significant variations in competitive conditions still exist. Whilst data revisions lead us to believe that BT's share of the high bandwidth AISBO market at December 2006 may have been higher than suggested in the January document, a more up-to-date analysis suggests that

BT's market share in fact fell between December 2006 and April 2008 to between 38% and 40%.

- 5.156 Some respondents also expressed concern that our market definition was reliant on an assessment of current competitive conditions and was not forward-looking. In particular, respondents suggested that, so far, most high bandwidth AISBO circuits were used to serve the London area. Demand is likely to increase for high bandwidth circuits, particularly in support of LLU backhaul. Outside of London, BT would be able to utilise its existing fibre assets but CPs without extensive networks outside London would be reliant on it for the provision wholesale circuits. Some respondents considered that developments such as the deployment of BT's ORCHID platform would serve to reinforce the economies of scale and scope. As such, it would not be economic for a CP to provision its own fibre, even for circuits of 2.5 or 10 Gbit/s.
- 5.157 We have considered this issue below and in Section 6, and in particular how likely it is that in the lifetime of this review a significant demand for circuits above 1 Gbit/s would appear outside major urban areas.

Forward looking assessment

- 5.158 In Section 3, we discussed a number of the above points as they also related to our retail market definitions. For example we discussed why we thought that the roll-out of BT's ORCHID platform would, if anything, make differences in the bandwidth gradient for AI services clearer. As this forward-looking retail assessment was based on the underlying wholesale input costs, we think that it is equally applicable to the AISBO market.
- 5.159 As discussed above, some respondents suggested that our assessment of competitive conditions might differ if we looked at this on a forward-looking basis. In particular, once the demand for circuits above 1 Gbit/s grows in areas outside London, where alternative infrastructures are less well developed, these operators argue that competitive conditions in the high bandwidth AI market will come to resemble those in the low bandwidth market. Our conclusion is that this is unlikely to happen, in the timeframe relevant to this review, for the following reasons:
- applications that require such high bandwidths tend to be concentrated in urban areas where large users such as financial institutions and government offices are located;
 - demand for LLU backhaul in dense traffic areas is currently being met with circuits of speeds up to 1 Gbit/s, with investments for the forthcoming years now concentrating on 1 Gbit/s circuits. There does not seem to be a significant demand for LLU backhaul at higher bandwidths;
 - demand for broadband in other areas, where the lower ability to exploit economies of scale makes LLU generally less attractive, is currently being met largely by use of bitstream access. This is unlikely to change in the near future.
- 5.160 The weight of evidence suggests that a significant cost differential is likely to remain between circuits at bandwidths up to 1Gbit/s and circuits at higher bandwidths. This is not likely to be affected by the implementation of BT's Project ORCHID. This suggests that customers are unlikely to be willing to switch between low and high bandwidth circuits in response to a SSNIP above the competitive price to an extent sufficient to render that SSNIP unprofitable. Moreover, competitive conditions in the

two markets appear to differ significantly (as indicated by both quantitative and qualitative factors) and appear likely to continue to do so.

- 5.161 In the light of this Ofcom believes that the market definitions set out in the January 2008 consultation remain appropriate. It therefore proposes to define a market for low bandwidth AISBO circuits including circuits of up to and including 1Gbit/s capacity and a market for high bandwidth AISBO circuits including circuits of over 1Gbit/s capacity.

Conclusions

- 5.162 In summary, we believe that we should apply the same bandwidth breaks at the wholesale level and at the retail level in both AISBO and TISBO markets, based on:
- the derived nature of wholesale demand;
 - our analysis of prices and costs (revised to exclude wholesale trunk in the case of TI circuits); and
 - our assessment of variations in competitive conditions between different bandwidth TISBO and AISBO services, which are likely to persist, at least for the timeframe of this review.
- 5.163 In summary, we have concluded the following bandwidth breaks apply for AISBO and TISBO services:
- TISBO segments at speeds up to and including 8Mbit/s;
 - TISBO segments at speeds above 8Mbit/s and up to including 45 Mbit/s;
 - TISBO segments at speeds above 45 Mbit/s and up to and including 155 Mbit/s;
 - TISBO segments at speeds above 155 Mbit/s;
 - AISBO segments at speeds up to and including 1Gbit/s; and
 - AISBO segments at speeds above 1 Gbit/s.

Trunk bandwidth breaks

- 5.164 Ofcom does not consider it appropriate to define distinct markets for trunk segments at different bandwidths. This is because, unlike in TISBO markets, in which the bandwidth of the service is determined by the bandwidth of the relevant retail leased line, trunk segment traffic can be aggregated. A CP's trunk network will be made up of high capacity links even if the majority of circuits provided over those links address lower bandwidth retail markets (for example most trunk circuits are for 2Mbit/s or below). This means that the trunk services demonstrate significant economies of scope and scale.
- 5.165 In order to exploit these economies of scope and scale by aggregating traffic onto trunk networks, a CP will seek to design its trunk routes so that it can deliver services at any relevant bandwidth. Therefore, a CP is likely to be present at all bandwidths on a given trunk route and competitive conditions are likely to be similar for all bandwidths on that route. An operator with existing trunk capacity could easily switch from providing one bandwidth to another.

- 5.166 In its response to the January 2008 consultation, BT argued that it would not make sense to mandate it to provide a trunk circuits at all bandwidths if it were subject to competitive pressures for high-bandwidth terminating segments. However, we do not think it is appropriate to base our product market definition for trunk markets on the competitive conditions of terminating segments. On the demand side, as noted above, trunk and symmetric broadband origination are complements rather than substitutes. Supply-side substitution is unlikely, since a communications provider with an access network would still incur substantial sunk costs in order to build a distinct trunk network.
- 5.167 More generally, the economics of trunk and TISBO markets are rather different and the observation that, in some areas, TISBO markets at a particular bandwidth are competitive does not establish that trunk markets in different locations, and with different cost and demand conditions, are also competitive. Moreover, the extent of competition in TISBO is still quite limited and it is only in the CELA that TISBO markets at 155Mbit/s and below are effectively competitive.
- 5.168 We therefore conclude that it is not appropriate to identify separate trunk market at specific bandwidths.

Other issues: wholesale versus retail markets

- 5.169 One CP questioned the overall validity of separating retail and wholesale markets for leased lines. The CP noted that a leased line is simply a service that offers dedicated capacity between two locations. It argued that an operator may sell an identical service for the same price to both another operator and a business customer. Both will actually be using the circuit as an input to a final service, but only one then happens to sell this service to another customer. The CP argued that this perhaps suggests that there is only one market for leased lines rather than distinct retail and wholesale markets.

Ofcom's response

- 5.170 In relation to the concern that it is not appropriate to distinguish wholesale and retail markets for leased lines, we would first note that the Commission's Recommendation on Relevant Markets specifically refers to wholesale leased lines on its list of markets national regulators should review. Therefore, in taking utmost account of that Recommendation, we think that it is necessary to examine the appropriate distinction between retail and wholesale markets.
- 5.171 Whilst it is possible that some leased line suppliers may not draw a clear distinction in the terms they offer to large retail customers and to other operators, a clear distinction can be drawn between the products which BT provides to retail customers (that do not own network infrastructure) and their wholesale counterparts³⁸. In order to use BT's wholesale PPC products a firm would have to invest in infrastructure of its own to combine with elements purchased from BT. However the tendency, if anything, is for large retail customers to outsource their requirements entirely and purchase a package of services as a "managed solution" rather than to invest in their own infrastructure.

³⁸ Although some MNOs have purchased circuits from BT on ostensibly retail "Netstream" tariffs in preference to wholesale RBS terms, we regard all MNOs' purchases as wholesale services.

5.172 A number of other respondents to our January 2008 consultation explicitly highlighted that the nature of retail demand, which often entails connecting low bandwidth circuits, is different to wholesale demand, which might entail demand for a large capacity backhaul link for example to extend the reach of an OCP's network to serve multiple downstream customers.

5.173 Indeed, in the January 2008 consultation, we sought to take explicit account of the need to distinguish between retail and wholesale services based on their intended use. For example, we treated Mobile Network Operators' purchases of retail leased lines circuits as wholesale purchases. MNOs combine these with their own network infrastructure to provide services to their retail mobile customers.

5.174 Therefore, in line with the Commission's Recommendation and the leased lines markets under review, we think that it is appropriate to consider both retail and wholesale markets.

Conclusions

5.175 In light of the above discussion, we concluded that the following wholesale product market definitions are appropriate.

Table 5.2: Revised wholesale product market definitions

Wholesale product markets	Bandwidth breaks			
TI symmetric broadband origination (TISBO)	Low Up to and including 8Mbit/s	High Above 8Mbit/s up to and including 45Mbit/s	Very high - 155 Above 45 Mbit/s up to and including 155 Mbit/s	very high - 622 Above 155 Mbit/s
Alternative interface symmetric broadband origination (AISBO)	Low Up to and including 1Gbit/s		High Above 1 Gbit/s	
Trunk segments (SDH/PDH)	All bandwidths			

Section 6

Wholesale geographic market definition

Introduction

6.1 In this Section, we first summarise the wholesale geographic market definitions set out in our January and July 2008 consultations. We then set out and respond to stakeholders' responses to these proposals before providing our conclusions with regard to the appropriate wholesale geographic market definitions for leased lines markets in the UK.

January 2008 proposals

6.2 In the January 2008 consultation we conducted a detailed geographic market analysis for each of the wholesale product markets defined (as summarised in Section 5 above).

6.3 Ofcom's analytical framework for defining the geographic scope of the relevant retail markets was explained in detail in Section 6 of the January 2008 consultation. This explained that there would be a separate geographic market for each of the relevant wholesale product markets in the Hull area. For the rest of the UK, Section 4 of the January 2008 consultation explained why, for leased lines markets, an analysis of demand-side and supply-side substitution will generally lead to the definition of very narrow geographic markets and thus is not informative of the geographic market definition for this review. In this light, Ofcom's analytical framework for the UK (excluding the Hull area) focussed on the presence of common pricing constraints and geographic variations in competitive conditions.

6.4 Ofcom's wholesale geographic analysis had four main elements:

- an analysis of wholesale service shares on a postal sector basis, using wholesale circuit information provided by operators;
- an analysis of network reach based on the number of alternative operators' networks within an economic build distance of each UK business site belonging to a business with over 250 employees, averaged by postal sector;
- consideration of BT's pricing policies, which can inform the extent to which there exists a common pricing constraint across geographic areas; and
- consideration of evidence on the degree of network interconnection between alternative network operators' networks.

6.5 Table 6.1 below summarises the proposed geographic market boundaries in the UK (excluding the Hull area) set out in the January 2008 consultation for each of the wholesale product markets considered.

Table 6.1: Summary of proposed wholesale geographic market definitions in the January 2008 consultation

Wholesale product market	Proposed geographic definition
Low bandwidth TI symmetric broadband origination	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
High bandwidth TI symmetric broadband origination	<ul style="list-style-type: none"> • The UK (excluding the Hull area and the CELA); • the CELA; and • the Hull area
Very high bandwidth TI symmetric broadband origination	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
Low bandwidth AI symmetric broadband origination	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
High bandwidth AI symmetric broadband origination	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
Wholesale trunk segments	<ul style="list-style-type: none"> • The UK

July 2008 proposals

- 6.6 In the July 2008 consultation in light of the responses to the January 2008 consultation we reviewed our methodology and the available evidence when defining the geographic scope of the revised proposed product markets. This led us to adjusting our analytical framework, including the revision of our assumed economic build distance from 250m to 200m.
- 6.7 In the July 2008 consultation document we assessed the geographic scope of the relevant markets for each of the two revised wholesale product markets; the very high bandwidth 155Mbit/s TISBO market and the very high bandwidth 622 Mbit/s TISBO market. The conclusion of this geographic analysis was that there exist a separate local geographic market in the London area for very high bandwidth 155 Mbit/s TISBO services, defined as the Central and East London Area (CELA) and the rest of the UK (excluding the Hull area). For the very high bandwidth 622 Mbit/s TISBO market we concluded that there is a national market, this being the UK (excluding the Hull area). Our proposed wholesale geographic market definitions from the July 2008 consultation are summarised in Table 6.2 below.

Table 6.2: Summary of proposed wholesale geographic market definitions in the July 2008 consultation

Wholesale product market	Proposed geographic definition
Very high bandwidth 155Mbit/s TI symmetric broadband origination	<ul style="list-style-type: none"> • The UK (excluding the Hull area and the CELA); • the CELA; and • the Hull area
Very high bandwidth 622Mbit/s TI symmetric broadband origination	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area

6.8 The following sub Sections consider the issues raised by respondents to the two consultation documents for the relevant symmetric broadband origination markets. We then go on to consider the issues related to the market for wholesale trunk segments before summarising our conclusions.

Review of responses to the January and July 2008 consultation documents

6.9 In the January 2008 consultation, we asked the following question in relation to our wholesale geographic market definition proposals:

Question 6: Do stakeholders agree with our proposed wholesale geographic market definitions? In particular, do you agree with Ofcom that a separate market now exists in the UK for high bandwidth TISBOs in the Central and East London Area (CELA)?

6.10 In the July 2008 consultation, we asked the following question in relation to our wholesale geographic market definition proposals:

Question 3: Do you agree with our proposed wholesale geographic market definition for the wholesale very high bandwidth 155 Mbit/s TISBO market? In particular, do you agree with Ofcom that a separate geographic market exists in the UK for wholesale very high bandwidth 155 Mbit/s TISBO services in the Central and East London Area (CELA)?

6.11 We addressed a number of comments raised in response to the January 2008 consultation in the July 2008 consultation. For ease of reference, where relevant, these are repeated below.

Definition of local geographic markets

TISBO

6.12 BT argues that Ofcom has been over-cautious in its definition of geographic markets, believing that there is evidence to support local geographic markets in other product markets and in different geographic areas. In particular, BT argues that for the high bandwidth TISBO market separate local markets exist in Birmingham and Manchester as well as a further ten other locations where there exist multiple networks.

- 6.13 We disagree with BT that we have been over-cautious in our definition of local geographic markets. We have been considering the generality of this issue since 2005 when we collected data from operators which fed into our discussion document on disaggregated markets and in our review of the wholesale broadband access market which we concluded in May 2008. Our view in these reviews has been that where the available evidence suggests that local markets exist and such a conclusion can be robustly justified, then it would be appropriate to define local geographic markets. That said, where evidence was more suggestive of there being a national market, then it would be appropriate to define the geographic market as national in scope.
- 6.14 While we have continued to take this approach, we have however, developed our analytical framework to take account of comments received in response to our discussion document on disaggregated markets³⁹. As set out in the January and July 2008 consultations, and summarised above, there are four main elements to our geographic analysis. We consider that it is important to take into account the available evidence of all of these elements when considering whether the scope of the geographic market for a particular product market is local or national.
- 6.15 In conducting this analysis we have reviewed the evidence throughout the whole of the UK, not only limited this to the London area. We produced data to this effect in Annex 7 of the January 2008 consultation. In light of the response from BT we revisited in the July 2008 consultation the question of whether there are separate local markets in parts of the UK in addition to the London area (Annex 6). The conclusion of that analysis is that while there is some evidence which could be used to support a conclusion of local geographic markets in other parts of the UK, it is our view that when the available evidence is considered in the whole, that a conclusion of local geographic markets in other areas cannot be robustly justified. It is our view that the weight of evidence more strongly suggests that these other geographic areas are part of a broader geographic market including the rest of the UK (excluding the Hull area) or the UK (excluding the CELA and the Hull area).
- 6.16 It remains the case, as highlighted in Annex 6 of the July 2008 consultation that the weight of evidence may not always suggest that these other geographic areas are part of a broader geographic market. We will continue to monitor market developments and the evolution of the competitive situation in order to assess whether different competitive conditions emerge in different geographic areas in the future.

AISBO

- 6.17 BT also argues that there exist local geographic markets in the provision of low bandwidth AISBO services and that Ofcom's analysis has not properly taken into account a forward-looking approach which would reveal the underlying potential for competition in the provision of low bandwidth AISBO services. BT further argues that the growth in LLU and associated self-provision of LLU backhaul by LLU operators indicates that there is local competition, which affects TISBO and AISBO markets.
- 6.18 We disagree with BT that there are local geographic markets in the low bandwidth AISBO market. While it is the case that there is some evidence which suggests that competitive conditions in the provision of these products do to an extent vary by

³⁹ "Disaggregated markets: leased lines", Ofcom, 28 March 2006. See <http://www.ofcom.org.uk/consult/condocs/disagg/consultation.pdf>

geographic location⁴⁰, we consider that the weight of evidence more strongly suggests that the geographic scope of the low bandwidth AISBO market is the UK (excluding the Hull area). This is for the same reasons set out in the January 2008 consultation:

- The analysis of service shares indicates that the geographic variation in competitive conditions is limited;
- While there is evidence of the potential for different competitive conditions in different geographic areas emanating from the presence of alternative operators as shown in our network reach analysis, this still appears to be a potential given the service share analysis above; and
- BT continues to price these services on a nationally uniform basis.

6.19 BT also criticises our approach for not being sufficiently forward-looking. We consider that we have taken as forward-looking an approach as it is possible to in this market given the changes that are taking place. Many TI circuits have recently or are being migrated to AI circuits, with this likely to continue as operators increasingly introduce 'next generation' networks. However, it is not clear how these changes will impact on competitive conditions in the market. One hypothesis is that competition will be come much more localised, with alternative operators concentrating their retail provision on their own network, in those geographic locations in which they currently have a network presence. An alternative hypothesis is that as BT rolls out its next generation network alternative operators will increasingly seek to benefit from the economies of scale that can be gained from using BT's network. There are also hypothesis which fall between these.

6.20 It is not at all clear which outcome will materialise and to speculatively conclude that the first of these scenarios will materialise and that local markets should be defined when there is no clear evidence that this will in fact be the case could risk significant consumer harm if markets were to be deregulated without sufficient competitive safeguards being in place. This is particularly so when the current available evidence does not support the finding of local geographic markets. Of course, should such an outcome materialise, we would need to review the market again to assess whether it was appropriate to remove regulation from certain geographic areas.

6.21 As to BT's argument regarding self provision of LLU backhaul by LLU operators we do not consider that this supports the finding of local geographic markets in the provision of low bandwidth AISBO services. We note in Section 5 that on a national basis, of total BES demand, only 20 percent is self-supply or provision from parties other than BT. This leaves 80 percent of BES provision being from BT. It could be that if all of this self-supply or alternative provision were to occur in the same geographic areas then it might be that there exist geographic differences in competitive conditions. However, from the data available to Ofcom, of this 20 percent, it is the case that there is very little geographic overlap of provision. Only two CPs self-provide or provide to third parties to any significant extent, with their customers being the same parties. Therefore, there is very little evidence of the self-provision of LLU backhaul circuits being such that it creates significant geographic variations in competitive conditions which would warrant the definition of local geographic markets. It is generally the case that LLU operators seek to purchase LLU backhaul from BT (on the basis of equivalence as determined by BT's

⁴⁰ For example the variation in local service shares illustrated in Figures 48 to 50 in the January 2008 consultation.

Undertakings) rather than choose to build their own capacity which could act as a competitive constraint on BT. A further point is that BT's reasoning implies separate backhaul and access markets. As explained in Section 5 we consider that the evidence suggests that there is a single market that includes access and backhaul. As such, BT's reasoning is not consistent with that evidence. That said, Ofcom recognises that there is the possibility that conditions of competition can change over the period of a market review and as such we intend to keep this market under review to ensure that the conclusions reached remain consistent with the evidence.

Pricing to inform market definition

- 6.22 BT argues (as it did on retail geographic market definition) that Ofcom is wrong to consider BT's pricing policies when defining geographic markets, citing a number of reasons why it has maintained national prices. These are that in the context of setting up Openreach it is not surprising that it has chosen to maintain a relatively simple pricing structure, the introduction of sub-national prices could have undermined trust with customers and further understanding of its costs on a geographic basis is required before it introduces local prices. BT goes on to state that it expects to introduce different pricing structures in the near term, which could include local geographic prices.
- 6.23 We disagree with BT that we are wrong to consider its pricing policies when defining the scope of geographic markets⁴¹. An operator's pricing can indicate the extent to which it considers conditions of competition are consistent across products or geographic areas. In addition, where national prices are set this can have the effect of transmitting competitive constraints in one geographic area to another geographic area – a common pricing constraint. Ofcom's approach is also consistent with that of the European Commission. For example, the European Commission earlier this year commented⁴² on the Austrian NRA's (TKK⁴³) decision to define a national geographic market in the provision of wholesale broadband access where this decision was made notwithstanding the comparatively stronger competitive dynamic in certain more densely populated areas identified by TKK. The European Commission considered that the evidence of Telecom Austria setting a nationally averaged price as being relevant to TKK's decision to define the market as national.
- 6.24 While we recognise that there may be other reasons why BT has continued to maintain a national price for a number of its services we continue to consider that the fact that it does is indicative of there being a national market. That said, it would not necessarily follow that if BT were to set local prices that the geographic market would then be found to be local in scope. Nor does it necessarily follow that where BT sets a national price that the market is necessarily national in scope.

⁴¹ Ofcom notes that the European Commission, in its comments on Ofcom's wholesale broadband access market review, indicated that pricing information is relevant to the assessment of the homogeneity of competitive conditions. See

http://circa.europa.eu/Public/irc/infso/ecctf/library?l=/uk/registerednotifications/uk20070733/uk-2007-0733_actepdf/ EN 1.0 &a=d page 11.

⁴²

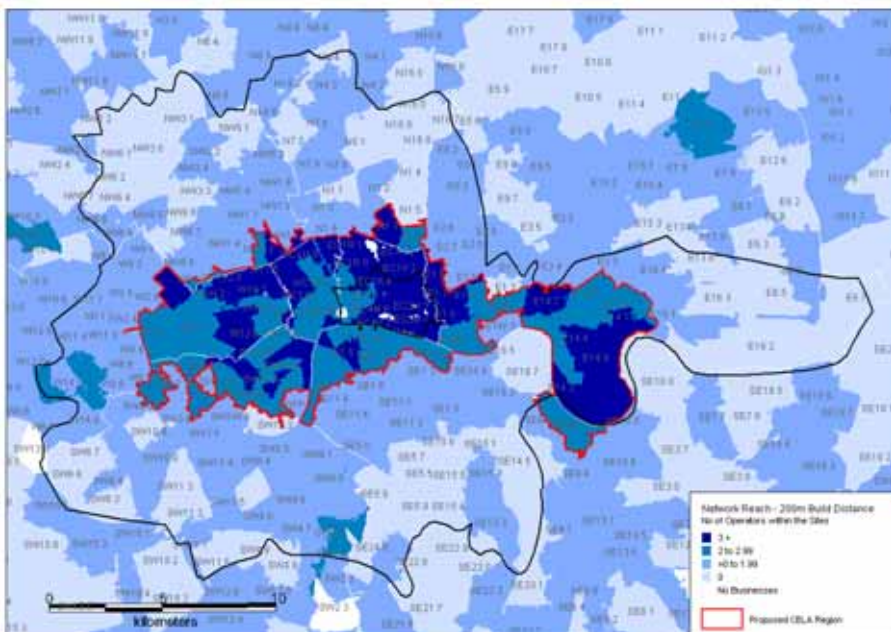
http://circa.europa.eu/Public/irc/infso/ecctf/library?l=/sterreich/registerednotifications/at20080757/at-2008-0757_enpdf/ EN 1.0 &a=d

⁴³ TKK (Telekom-Control-Kommission)

Assumed build distance is too long

- 6.25 Some respondents argued that our use of a 250m radial distance build distance was an order of magnitude too high. They made a number of points in order to support their view. This included arguing that we have not included all relevant costs in arriving at our economic build assumption and other factors such as the actual builds not being straight line builds, the contract length and the time involved in providing a circuit. These respondents question why Ofcom had used a relatively high build distance assumption of 250m despite responses to its Disaggregated Markets consultation document published in 2006 which suggested that the economic build distance is much shorter. One also cautioned against Ofcom using a long build distance because of practical difficulties of using a shorter distance. One of these respondents suggested that digging even 40m from a flex-point to a customer would be exceptional.
- 6.26 In light of the comments and additional evidence we received on the economic build distance used in our geographic analysis we revisited the question of what an appropriate build distance assumption would be. This additional analysis was set out in the July 2008 consultation where we considered the local geographic boundary of the very high bandwidth 155Mbit/s TISBO market. In light of this additional analysis we considered that a more appropriate build distance to use in our geographic analysis is 200m as opposed to 250m. This has the effect of changing the precise boundary of the Central and East London Area (CELA) market in those product markets where we conclude that local geographic markets exist. The revised boundary of the CELA market is shown in Figure 6.1 below, with the boundary of the market shown in red. The black boundary signifies the boundary of the CLZ, which is defined as the geographic area served by the 020 7 dialling code.

Figure 6.1: Boundary of the CELA market proposed in the July 2008 consultation document



- 6.27 We have received a number of comments in response to our revised build distance assumption in the July 2008 consultation. Many of these respondents remain critical that we have used too long a build distance. These respondents argue that given the build costs and the prices on which BT is required to make its services available, a

build distance of no more than 50m is justifiable. However, some of these respondents acknowledge that other relevant economic indicators such as existing service shares might suggest that an appropriate build distance assumption could be up to 100m.

- 6.28 BT on the other hand argues that for very high bandwidth 155 Mbit/s TISBO services in particular that the economic build distance for alternative operators should be substantially more than 200m. BT cites the fact that in postal sectors outside the proposed CELA boundary there are alternative operators which are able to provide a significant number of circuits. BT argues that the 200m assumption is impacted by the fact that BT is required to provide regulated wholesale access products and that absent regulation there would be a greater incentive for alternative operators to extend their networks.
- 6.29 One respondent commented that it agrees with our geographic assessment of the very high bandwidth 155Mbit/s TISBO market whereby we have identified a separate local market in the London area.
- 6.30 Ofcom has carefully considered all of the points raised by respondents on this issue in response to both the January and July 2008 consultations. After due consideration we continue to consider that the revised proposals set out in the July 2008 consultation remain appropriate and that the appropriate economic build distance assumption used in our network reach analysis is 200m (revised from 250m in the January 2008 consultation). We also consider that this economic build distance assumption is relevant for both the high bandwidth TISBO and the very high bandwidth 155 Mbit/s TISBO markets, where we found evidence of variations in competitive conditions, which suggest the presence of local geographic markets.
- 6.31 One of the main points put forward by respondents arguing for a shorter assumed economic build distance is that given the cost of purchasing wholesale inputs from BT based on current regulated prices, operators would not build out to 200m (with many arguing they would not build out beyond 50m). Some of these respondents contrasted this with the historic position where BT was not required to offer wholesale inputs at regulated prices and as such it was economic for alternative operators to build out longer distances in that environment.
- 6.32 Ofcom recognises that this indeed may be the case. We would expect that as regulation has been introduced which has had the effect of reducing BT's prices, alternative operators would revise their decisions about when to build and extend their own network or purchase inputs from BT. As BT's prices fall, we would expect operators to purchase more from BT. However, we have a number of observations on this point.
- 6.33 The first observation is that when defining markets for the purposes of assessing whether there exists SMP and whether there is a requirement for ex-ante remedies to be put in place, it is necessary to abstract from regulation at the level of the market being assessed. This is because to do otherwise introduces circularity into the market definition process. In the current discussion, this means abstracting from the provision of regulated wholesale inputs by BT at regulated prices. The appropriate build-buy consideration for operators is that which exists in the absence of such regulation. Therefore, the consideration of alternative operators may be closer to a decision as to whether to build and extend their own network in order to serve a new customer or not to build and extend their own network at all and to forego serving that customer. Such a build distance is likely to be greater (and perhaps significantly greater) than it would be where regulated wholesale products are available from BT.

- 6.34 A further observation, linked to the first, is that our network reach analysis together with our local service share analysis indicates that in the geographic area defined as the CELA a number of operators have extended their networks further than 50m in order to serve customers. Respondents have argued that this reflects the build decision at the time prior to the availability of BT regulated products and as such is not relevant now. On the contrary, Ofcom considers that this is very relevant as it shows that in the absence of the option of purchasing regulated products (which we have set out above we need to abstract from when defining markets in this review) operators do build significant distances.
- 6.35 A third observation is that despite the presence of regulation which requires BT to provide wholesale inputs at regulated prices, the evidence suggests that competition in the wholesale high bandwidth TISBO and very high bandwidth 155Mbit/s TISBO markets has continued to develop and increase. This is contrary to what might be expected if operators were truly limited in their ability to self-provide wholesale services in these markets.
- 6.36 Respondents also argued that even if an economic build distance of 200m can be established for the very high bandwidth 155Mbit/s market, then the appropriate build distance should be shorter for the high bandwidth market. Alternatively, as argued by BT, the build distance for the latter market should be longer as a 200m economic build distance has been established for the high bandwidth TISBO market.
- 6.37 In response, we agree that it is not unreasonable to suggest that there would be different economic build distances for different bandwidth services and that these would increase as bandwidth increases, due to the higher value of higher bandwidth services. That said, it is not clear, given the available evidence, that for these services where we have identified local geographic markets that any difference in economic build distance is significant. This is particularly so when we review the local service share data in the London area for each of the two product markets. This analysis suggests that a build distance in the region of 200m is appropriate for both product markets. Of course, we recognise that competitive conditions may change going forwards. It is therefore important that we continue to review conditions in these markets to ensure that the conclusions reached in this market review remain relevant.

Using postal sectors as the geographic unit for analysis

- 6.38 A number of respondents argued that this geographic unit is not disaggregated enough to fully capture any geographic differences in competitive conditions. The result of this will be that the local geographic markets defined by Ofcom will include areas of insufficiently homogeneous competitive conditions. Some of these respondents advocated that the analysis should be conducted on a building-by-building basis to mitigate this risk.
- 6.39 One of the respondents also added that it was not open to Ofcom to make a trade-off between precision and practicality. It added that if there are geographic areas within broader geographic units (e.g. postal sectors) which have different conditions of competition then the definition of markets based on these broader geographic units is likely to have unintended and detrimental impact on consumers. Another respondent argued that if Ofcom were not able to robustly identify those areas where there is more competition, then the market should be defined as national in scope. This approach, would ensure that regulation is kept in place unless it is shown that it needs to be removed.

- 6.40 We disagree with respondents which argued that we should not use postal sectors as the geographic unit in our analysis. As we noted in our discussion of this issue in the January 2008 consultation, while using individual premises would allow a very granular assessment of competitive conditions, there are practical issues which need to be considered. These practical considerations, including obtaining accurate data, conducting the required analysis and being able to implement the findings mean that it would not be possible to come to a conclusion on the question being asked or to implement the requirements of the Regulatory Framework. This would clearly not be an acceptable outcome and this is the reason why we need to strike an appropriate balance between granularity and practicality.
- 6.41 This is also the reason why we do not agree with the comment from the respondent which stated that we could not strike such a balance. In striking this balance and using postal sectors as the geographic unit in our analysis we explicitly recognised that within individual postal sectors included within a geographic market that there may nonetheless be some variation in competitive conditions. But this will be the case regardless of the geographic unit used if it is more aggregated than an individual premise. The alternative to not striking a balance is not to conduct the geographic analysis at all, which as noted is not an acceptable outcome.
- 6.42 We also do not accept the comment from one of the respondents which in effect proposed that if we are required to strike such a balance then the market should be defined as national in scope so that regulation is retained until it is shown that it needs to be removed. We disagree with this proposed approach for a number of reasons, including:
- it presumes that the default market definition is national and that it should be regulated (when in fact there is no such default market definition as definitions should be based on the available facts); and
 - if geographic variations in competitive conditions which can be shown to exist are not reflected in market definitions, then the market power assessment could find that there is no operator with SMP across that whole market. In this scenario geographic areas which should properly be regulated will end up not being regulated, with the associated risks of detriment for citizens and consumers.
- 6.43 It might also be argued that by striking a balance between granularity and practicality this could risk creating pockets of monopoly within a deregulated local market. That is to say there might be small areas within a postal sector that is included in a deregulated market in which there are some small geographic areas e.g. individual buildings, where end users are unable to access competitive supply options. Ofcom notes on this point that it would nevertheless still have available its ex-post competition law powers to address any abuse of monopoly power in such a scenario.

More than two competing operators are required

- 6.44 Respondents argued that if separate local markets are to be defined, a presence of more than two competing operators in addition to BT is required. They also argued the proposed approach appears to be inconsistent with Ofcom's approach in other areas, with wholesale broadband access and mobile telephony cited. One respondent stated that economic theory suggested that five competitors are required for a market to be found competitive. Moreover, one of these respondents argued that due to operators having limited connectivity to buildings (even within the proposed CELA market) the prospects of a fully functioning merchant market existing are limited. In this light this respondent argued that the market must be national in

scope as it is not possible to sell multi-sited products but not to be able to offer supply in the proposed CELA area.

- 6.45 We do not agree that the presence of more than two competing operators in a geographic area is required in order to be able to define a geographic area as a separate market from another geographic area. In paragraphs 6.48 to 6.51 of the January 2008 consultation we set out our approach to defining the precise geographic boundary of the local market where the available evidence suggested that local geographic markets exist.
- 6.46 It is important to note from this discussion that the number of operators which are able to serve customers is only one of the indicators of whether there are local geographic markets. The other indicators are local service shares and BT's pricing policies. In the high bandwidth TISBO and the very high bandwidth 155 Mbit/s TISBO markets in which we identify a separate CELA market, our service share analysis showed that BT's service share tended to be lower in the central London area. It is also the case that BT chooses to sell services in the high bandwidth TISBO market at a discount in the CLZ (which covers the central London area). Our network reach analysis also showed that postal sectors where there are two or more competing operators able to serve customers were highly correlated with the postal sectors where BT had a low service share in the central London area. The postal sectors where there are three or more competing operators able to serve customers were much more dispersed and as such do not correlate as well with the data on local service shares.
- 6.47 We also consider that our approach is consistent with our approach in wholesale broadband access where three or more competing operators were used to inform the precise geographic boundary of the markets in that review. We explained in the January 2008 consultation that the model of competition in TISBO markets is based on investment in competing local infrastructure as opposed to gaining access to regulated local loops in the case of wholesale broadband access. This difference means that there is a difference in the balance between fixed costs of entry to a local market and the incremental cost of serving additional customers (with the incremental cost of serving additional customers within an exchange area being very low in the case of wholesale broadband access).
- 6.48 In the case of mobile telephony, while the 3G spectrum award in 2000 did provide a licence for a fifth operator it has never been our position that five operators are required in order to find the market to be competitive.
- 6.49 We also disagree with the respondent which argued that economic theory suggests that a minimum of five competitors are necessary for a market to be found to be fully competitive. This respondent did not provide a reference for its assertion. However, Ofcom would note that mergers are often cleared by competition authorities where the market structure changes from five to four competitors, four to three competitors and even three to two competitors.
- 6.50 On the comment relating to the prospects of a fully functioning merchant market, while the development of such markets in an unregulated environment could potentially support wider provision of downstream services (in that retailers will have access to wholesale inputs) it is not a necessary condition for the finding of a local market or for the justification of the removal of regulatory obligations at the wholesale level. The relevant consideration is whether there could be expected to be sufficient competition to protect the interests of consumers at the retail level. Our analysis shows that in the CELA market, there are a number of operators which have a very

significant coverage of the geographic area included in that market. In addition, there is substantial evidence of alternative operators interconnecting with each other in the London area suggesting that there are opportunities for a merchant market to continue on a forward-looking basis. These factors separately and together suggest that consumers (businesses) requiring multi-site connectivity will be able to secure such connectivity, even in a situation where there are different regulatory obligations in the CELA geographic market.

Practical issues associated with local geographic markets

- 6.51 Two respondents questioned the practical issues related to the finding of local geographic markets. The practical issues highlighted include the increased complexity introduced by local geographic markets such as understanding costs, the separation of regulatory accounts and the greater burden on Ofcom and operators and the potential for leverage between different geographic markets. One of these respondents argued that the geographic deregulation of leased lines markets would require significant changes to billing and provisioning processes. These respondents argued that these points meant that Ofcom should have conducted a more thorough impact assessment before coming to its conclusions.
- 6.52 We agree that the practical issue highlighted by these respondents are important and that regulating on the basis of local geographic markets does create additional complexities. However, we do not agree that this would be grounds for concluding that the market is national in scope when the available evidence suggests that there are substantial geographic variations in competition and local markets are present.
- 6.53 In addition, we do not agree that it is appropriate to determine the boundary of the relevant market by reference to an impact assessment or that Ofcom has duty to consider such issues in its impact assessments. The market definition should reflect the available evidence, which in the case of the high bandwidth TISBO and the very high bandwidth 155Mbit/s TISBO markets we considered support the definition of the CELA market. Impact assessments are however required to assess the suitability and proportionality of the different remedy options available.

Supply-side substitution and ability to interconnect

- 6.54 One respondent argued that there is not sufficient evidence of supply-side substitution to justify the relaxation of ex-ante remedies in the high bandwidth TISBO market. Another respondent made a related point, arguing that the evidence it had suggested that there remains limited scope for alternative operators to interconnect with each other.
- 6.55 We note that we have not argued that the geographic boundary of the markets considered in this market review should be defined by reference to supply-side substitution as the scope for such substitution is limited. We therefore seek to assess the homogeneity of competitive conditions to inform whether separate local markets exist in the provision of these services.
- 6.56 In paragraphs 6.57 to 6.66 of the January 2008 consultation we set out our consideration of barriers to interconnection together with operators' coverage of the geographic area which makes up the proposed CELA market. This included:
- the evidence available to us on the extent to which operators (excluding each other) interconnect with each other in different geographic areas (national, CLZ including City of London, CLZ excluding City of London, and City of London); and

- the coverage by business sites and postal sectors included in the proposed CELA market for each individual alternative operator for which we collected data for the market review.

6.57 We concluded in light of the available evidence that insurmountable barriers to interconnection do not exist. To the extent such barriers exist, their importance for competition is diminished by the evidence which shows that there are operators which have a very significant coverage of the proposed CELA market.

6.58 The evidence provided by one of the respondent could be interpreted to suggest that it is limited in its ability to interconnect with other operators. However, it did not identify in which geographic area its evidence related to so it is not possible for us to assess whether it applies to the proposed CELA market. Regardless of this, the evidence which we presented in the January 2008 consultation which showed that of 924 high bandwidth TISBO ends in the City of London, 233 (or around 25%) interconnect with alternative operators continues to support the conclusion that any barriers to interconnection are not insurmountable, particularly in the central London area.

The number of business premises included looks too low

6.59 One respondent commented that we have omitted a number of sites which should have been included in our network reach analysis as some will require 45Mbit/s (and higher bandwidth) services. These sites were BT network premises such as local exchanges, MSAN and METRO sites, mobile network operator network premises (e.g. radio base station sites), broadcast network premises, CCTV camera locations, telehouses and internet peering houses.

6.60 If we were to include these sites it is not clear how they would change the conclusions of the analysis (with the exception of BT's premises, telehouses and internet peering houses below). This is because there will be a limited number of additional locations in individual postal sectors so the conclusion of the geographic analysis will not be altered. What will be more important is that the relevant circuits supplying those locations are included in the market share analysis (once the market boundaries have been defined) and this is indeed the case. Therefore, we have included the additional sites where the relevant data has been easily sourced. On this basis we have included broadcast network premises in the analysis.

6.61 For BT's premises, telehouses and internet peering houses, when we considered these premises in the Disaggregated Markets discussion document we excluded these sites and associated circuits from the analysis. We found that due to the high concentration of circuits at these premises and the fact that many alternative operators have a presence at these sites, including these premises in the analysis could lead to the results of the postal sector analysis erroneously indicating that a postal sector was more competitive than it actually was. This effect can be illustrated by way of a simple example. Assume a postal sector contains the location of a telehouse and this telehouse has many hundreds of circuits connected to it with only a very small minority being provided by BT. Next assume that the same postal sector has within it five business sites, all of which were provided by BT. Under such a scenario there would be a risk of erroneously finding that postal sector to be relatively competitive (due to the supply conditions at the telehouse) even though there was little prospect of end-users being able to access competitive supply.

Local markets for very high bandwidth TISBO services

- 6.62 Two respondents to the January 2008 consultation disagreed with Ofcom's finding of a national market for the very high bandwidth TISBO market. One of these respondents cites lower retail prices from BT in the CELA as indicating differences in competitive conditions in support of its view. It also points to there being less competition in other areas of the UK as supporting a finding of local geographic markets. This respondent also argued in relation to the very high bandwidth market that if local geographic markets cannot be identified then Ofcom should be conservative about withdrawing regulation from this market as the withdrawal of regulation could lead to significant market failures in certain geographic areas. This point was supported by the other respondent which argued that local markets are more likely in higher bandwidth markets and as such 155Mbit/s TISBO products should be found to be in separate geographic markets, as there is negligible competition in certain geographic areas in the provision of these services while there is strong competition in other geographic areas.
- 6.63 The July 2008 consultation set out our revised proposals for the definition of separate product markets for very bandwidth 155Mbit/s TISBO and very high bandwidth 622 Mbit/s TISBO markets and the finding of a local CELA market for the very high bandwidth 155 Mbit/s TISBO market. We consider that the revised proposals in the July 2008 consultation address the comments summarised above.

The Hull area

- 6.64 Respondents who commented on the issues generally supported a finding of the Hull area to be a separate geographic market from the rest of the UK.

Trunk segments in the UK

- 6.65 As discussed in Section 5, we proposed a revised approach to identify the break between trunk and terminating segments for traditional interface circuits compared to the 2004 LLMR.
- 6.66 In the remainder of this Section, we discuss our revised trunk definition and, based on this definition, our assessment of geographic markets. First, we summarise our January 2008 consultation, in particular, we recap the key objectives of our trunk market definition to remind the reader why we thought it was necessary to revise our trunk market definition. We then explain the approach we adopted to identifying a revised trunk definition in the January 2008 consultation. We then consider responses to our January 2008 consultation and further analysis we have conducted in light of those comments. Finally, we present our conclusions in respect of trunk segments.

January 2008 proposals

Context to our geographic trunk market definition

- 6.67 Before setting out our approach to assessing geographic markets for trunk segments, we provide a reminder of the context to our trunk market definition. In particular, in the January 2008 consultation, we explained our concerns that the existing LLMR 2004 trunk market definition did not capture sufficiently the differences between trunk and terminating segments (i.e. TISBO services). In other words, we were concerned that the current trunk definition failed to capture where key economic bottlenecks existed.

- 6.68 The LLMR 2004 definition classed all circuits between BT Tier 1 nodes (or equivalents on OCPs' networks) as trunk. We believed this was appropriate, at that time, because many OCPs had elected to locate at a number of BT Tier 1 nodes and it seemed likely that they would interconnect at more nodes in future. Therefore, at the time of the last review, we considered that Tier 1 nodes would provide an appropriate forward-looking basis to inform the break between trunk and terminating segments.

Evidence since the last review suggested we re-assess the trunk definition

- 6.69 In the January 2008 consultation, we noted, however, that market developments since the last review suggested that OCPs had not built out their networks further to all Tier 1 nodes. In many cases, our assessment was that, for a large part, this reflected insufficient aggregation opportunities on certain routes to justify OCPs building further network to interconnect at all Tier 1 nodes. The evidence on OCPs' network build decisions appeared to point to the fact that the economies of scope and scale were more limited on some routes. We explained that some inter-Tier 1 routes might instead share characteristics more similar to terminating segments (i.e. routes that are more likely to be economic bottlenecks).⁴⁴
- 6.70 By continuing to define trunk as circuits between Tier 1 nodes, we thought that this would potentially ignore evidence on the factors that limit operators' ability to interconnect deeper into the network. Hence, in light of the above developments since the last LLMR 2004, we wanted an alternative definition. We based this on the identification of key network nodes – referred to as “aggregation nodes” – that better captured where these bottlenecks reside (i.e. where the terminating market ends and where potentially competitive trunk market begins).

We proposed to identify aggregation nodes to inform the scope of the trunk market

- 6.71 In order to benefit from economies of scale an OCP is likely to want to carry all of its traffic between urban centres over a single high capacity trunk circuit if possible. It will therefore wish to aggregate traffic from all of its customers within each centre at a single point or node for onward conveyance over this trunk link. In most urban centres, therefore, operators are likely to interconnect at only one of BT's Tier 1 nodes. The OCP may need to purchase wholesale circuits from BT to provide links from customer premises to this node. At present, the links purchased from BT may well comprise both TISBO and trunk circuits, the latter being used where the link passes over more than one Tier 1 node within the same urban area. In future, under our proposed market definition, all the Tier 1 nodes within the same area would be grouped within a single aggregation node and any links between Tier 1 nodes in the same aggregation node will be regarded as TISBO.
- 6.72 As explained in Section 5, we considered that the aggregation nodes concept better reflects where the likely break between trunk and terminating segments sits. The aggregation nodes approach would capture the differences in competitive conditions, with more competitive trunk routes connecting urban centres, and the less competitive terminating segments distributing traffic to customer premises within these centres. This does not of course mean that all trunk routes are necessarily competitive, or that all SBO markets are necessarily uncompetitive. But it is consistent with the idea that competitive entry is more likely where entrants are able

to benefit from economies of scale by aggregating traffic onto their own high capacity links.

We identified aggregation nodes based on interconnection evidence and wider analysis

- 6.73 As a first stage to our trunk geographic market analysis, we assessed the likely location of these aggregation nodes to determine the scope of the trunk market. We based our identification of aggregation nodes on OCPs' interconnection and network build decisions. We supported this assessment with our own bottom-up analysis that identified potential aggregation nodes based on the likely available economies of scale in different geographic locations.
- 6.74 As a second stage to our geographic market assessment, having used the aggregation nodes we identified to determine the scope of the trunk market, we then undertook geographic analysis of the trunk routes between aggregation nodes to see whether it was appropriate to define sub-national markets. We explain these stages in more detail below.

Identification of aggregation nodes

- 6.75 In the January 2008 consultation, we therefore proposed to narrow the scope of the trunk definition by defining trunk circuits as those between a smaller number of "aggregation nodes". We identified 40 such aggregation nodes.
- 6.76 In order to determine the likely locations of these aggregation nodes we looked at available evidence on where most OCPs had chosen to interconnect with BT to locate their key points on the network to pick-up traffic. In parallel, we undertook further analysis ("proximity analysis"), which sought to take into account the factors that drive CPs' interconnection decisions and hence the likely extent of their trunk networks.

Proximity analysis

- 6.77 As explained in the January 2008 consultation, we undertook analysis intended to reflect the factors most important in determining the likely scope of CPs' trunk networks. We identified that, as a general rule, CPs' decision to interconnect at a particular node relates to two key factors:
- **the aggregation opportunities available:** based for example on the volume of circuits potentially served by that node; and
 - **the relative distances involved:** if they are already located at another interconnection point (i.e. a BT Tier 1 node), what distances would be involved in getting back to an existing interconnection point (relative to interconnecting at the new node).
- 6.78 These volume and distance factors are likely to be very important in informing CPs' interconnection decisions. For example, consider the situation where a CP has the choice over whether to interconnect at one or more Tier 1 nodes in a big city (e.g. in Glasgow an OCP might choose to pick-up terminating traffic from either the Clyde or Glasgow Tier 1 nodes). It might be the case that one of these Glasgow nodes serves a relatively smaller number of potential end-users than the other. If a CP already has a point of interconnection at the other Tier 1 nearby, in these circumstances, it may not be worth investing in additional infrastructure to interconnect at a closer Tier 1 node. Instead of locating at all Tier 1 nodes in Glasgow area (i.e. both the Clyde and

Glasgow Tier 1 nodes), the CP would be more likely to backhaul their traffic to an existing point of interconnection (e.g. from an end-user site in the Clyde area to the CP's interconnection point at the Glasgow Tier 1 node nearby). On the other hand, with larger volumes of circuits, it may be economic to locate a network node closer to pick-up traffic from existing (and prospective) end-users sooner. Therefore, with sufficient aggregation opportunities it may be worthwhile to have a number of interconnection points in relatively close proximity.

- 6.79 To capture the relationship described above between the volume of circuits and the distance to the next nearest node, we assumed that it would be appropriate to group together any Tier 1 nodes with certain proximity of each other. However, reflecting the discussion above, we had to take into account the fact that the potential volumes served by different Tier 1 nodes would mean that there were different aggregation opportunities across the UK. We therefore used different "proximity assumptions" depending on the volume of circuits served at different Tier 1 locations. For example, we assumed that for areas with greater aggregation opportunities (based on the volumes of circuits sold in the catchment area of that node), a CP would interconnect at Tier 1 nodes even if these nodes were in relatively close proximity (10-15km). For Tier 1 nodes, serving relatively fewer circuits, we used a "proximity assumption" of 20-25km.
- 6.80 Hence, we took as our starting point BT's Tier 1 nodes and used our "proximity assumptions" to group those nodes together. For each Tier 1 node, we assessed whether it would be worthwhile for an OCP to locate at a particular Tier 1 node, given the location of one or more Tier 1 nodes nearby. We did this by comparing the information on the actual distances between nodes to our proximity assumption and grouped any nodes where the distance between them was less than the proximity assumption. Any Tier 1 nodes grouped together would form part of the same aggregation node. Therefore, each aggregation node represented at least one Tier 1 node and for some aggregation nodes potentially a group of one or more Tier 1 nodes. This "bottom-up" modelling approach resulted in grouping BT's Tier 1 nodes into a consolidated list of 40 identified aggregation nodes as set out in Table 6.3 below.

Table 6.3: January 2008 consultation aggregation node proposals based on major urban centres

ABERDEEN	CRAWLEY/REDHILL	LIVERPOOL	PRESTON
BELFAST	DONCASTER	LONDON	READING
BIRMINGHAM	EDINBURGH	LUTON	SALISBURY
BISHOPS STORTFORD	GLASGOW/CLYDE	MANCHESTER	SHEFFIELD
BRIGHTON	GLOUCESTER	MILTON KEYNES	SLOUGH
BRISTOL	GUILDFORD	NEWCASTLE	SOUTHAMPTON/COSHAM
CAMBRIDGE	IPSWICH	NEWPORT/CARDIFF	SWINDON
CARLISLE	IRVINE	NORTHAMPTON	WARRINGTON
CHELMSFORD	LEEDS	NOTTINGHAM	WOLVERHAMPTON
COVENTRY	LEICESTER	OXFORD	YORK

Source: BCMR, January 2008

- 6.81 Table 6.3 above shows, for example, a single Glasgow aggregation node (i.e. BT's two Tier 1 nodes in the Glasgow area and would now be represented by the single node). Hence, our assessment was that an OCP would not build out to both of those Tier 1 nodes reflecting a lack of aggregation opportunities. This would mean that we

would class any circuits between the Tier 1 nodes within the same aggregation nodes as terminating segments reflecting this form of economic bottleneck.

We complemented this proximity analysis with wider market evidence

- 6.82 The consolidation of 67 Tier 1 nodes into one of these 40 “aggregation nodes”, depended to a large extent on the proximity assumptions referred to in paragraph 6.79 above. However, in parallel to this analysis, we also looked at actual interconnection evidence. This enabled us to cross-check the results we derived from the “bottom-up” analysis. It therefore helped ensure that the proximity assumptions we used to capture the likely relationship between likely aggregation opportunities and distances mentioned above were sufficiently robust. The available evidence on OCPs’ network build and interconnection decisions tended to confirm our results. In other words, the evidence suggest that the aggregation nodes we identified using our proximity analysis coincided with evidence on where OCPs had chosen to interconnect with BT.
- 6.83 Therefore, through a combination of bottom-up (based on proximity assumptions) and top-down analysis (based on the actual CP interconnection), we were able to identify the 40 aggregation nodes.

Assessment of geographic markets

- 6.84 Having identified the 40 aggregation nodes that informed the scope of the trunk market, we then went on to assess whether we should identify local geographic markets for the trunk market. For each of the 40 aggregation nodes we identified, there would be (potentially) 39 other aggregation node destinations, resulting in up to 780 potential trunk routes. We considered whether, from this total number of (up to) 780 trunk routes, we could identify a sub-set of competitive trunk routes such that local trunk markets might exist.
- 6.85 Consistent with the approach we took to assessing our geographic market definition for TISBO and AISBO markets (as set out above) we based our geographic assessment of trunk markets on three main areas:
- demand and supply-side substitution opportunities;
 - available price evidence; and
 - potential variations in competitive conditions between individual trunk routes.
- 6.86 We explain our assessment in each of these areas below. Our overall assessment was that the available evidence, when taken together, pointed towards a national market definition.

Demand and supply-side substitution

- 6.87 In the January 2008 consultation, we noted that the principles of demand and supply-side substitution also apply to the definition of the geographic scope of the relevant economic market. However, rather than considering alternative products, we explained that (in the context geographic market definition) this analysis should assess whether a hypothetical monopolist seeking to impose a SSNIP on a particular trunk route would face constraints from demand and supply-side substitution. We

summarise below our assessment of demand-side substitution opportunities, which was the main point considered in our January 2008 consultation⁴⁵.

- 6.88 We noted that our product market definition (i.e. the identification of aggregation nodes) to some extent already captured demand-side substitution opportunities. This is because, under the proposed aggregation nodes approach we would treat many routes between Tier 1 nodes as possible substitutes. For example, circuits between any Tier 1 node within an aggregation node (e.g. London) to another aggregation node destination (e.g. Reading) would all be alternative means of serving the London-Reading trunk route. Hence, we would treat some circuits between Tier 1 nodes as direct substitutes for each other. Therefore, our aggregation node analysis implicitly took into account demand-side opportunities.
- 6.89 However, in the January 2008 consultation, we noted that CPs may also have the option of routing traffic less directly over alternative trunk routes (for example, if a CP had available trunk capacity, it could route traffic from London to Oxford and then from Oxford to Reading). We therefore noted that the ability of CPs to route traffic indirectly might point to much wider set of trunk routes constraining each other based on these indirect routing opportunities.
- 6.90 We considered, however, that the relevant test for market definition purposes was whether a hypothetical monopolist would be constrained from imposing a SSNIP on the London to Reading trunk route (on the assumption that each trunk route were competitively priced). If the costs of indirect routing were also priced in a cost reflective manner, we considered it would be unlikely that such “indirect” routing would impose a constraint (as the distances involved were higher).
- 6.91 However, we pointed to other scenarios in which indirect routing could impose a constraint. For example, we highlighted that a circuit routed from London to Manchester could use an intermediate point between both cities (e.g. Birmingham). Therefore, a CP with capacity on routes from London to Birmingham and Birmingham to Manchester could potentially compete for the London to Manchester route. If the choice of alternative trunk routes available to a CP is sufficiently flexible, (i.e. there are many alternative routes that could be used to serve a particular trunk requirement) then this could potentially result in each trunk route being progressively widened to include those alternate routes.
- 6.92 In our January 2008 consultation, we thought that demand-side evidence potentially pointed in different directions. As discussed above, based on a strict interpretation of market definition, we thought that this could result to a quite narrow market definition (based on individual trunk routes). Nevertheless, we also highlighted why a wider market definition might exist, which might, ultimately point to a national market definition. For example, if different trunk routes could be easily combined then, via a chain of substitution, this could result in a trunk market being defined as national in nature.

BT's pricing policies

- 6.93 If BT were subject to significantly different levels of competition on particular routes, then it might be expected to respond to that competition by reducing the price of trunk routes serving particular areas. However, based on our assessment of BT's published prices for its PPC trunk, we noted that it had elected to apply a uniform

⁴⁵ In the context of the hypothetical monopolist test, we did not think supply-side substitution would provide a sufficient constraint, given the significant cost and sunk nature of investments.

national price for its trunk segments (i.e. the price of trunk does not vary depending on which geographic area that circuit serves). As BT's trunk regulation does not prevent BT from varying prices by geography, we considered that its pricing behaviour did not suggest that it was facing strong competitive pressure on particular trunk routes. Therefore, we did not think that evidence from BT's pricing behaviour lent support to a finding of separate local trunk markets.

6.94 Hence, in the January 2008 consultation, we thought that BT's pricing behaviour did not support a sub-national definition; but we did not rule out demand-side substitution (via indirect constraints) also pointing to a wider market view. However, we explained that a demand and supply-side substitution might point to very narrow view of trunk markets. With this in mind, we undertook further analysis, starting with a relatively narrow (route-specific) definition. As with our geographic assessment of AISBO and TISBO markets, this was based on an assessment of variations on competitive conditions.

6.95 We explain further below our assessment of variations in competitive conditions. This includes how we came to a view that a national trunk market definition was appropriate, as was also suggested by BT's pricing behaviour and, in certain circumstances cases, by demand-side substitution.

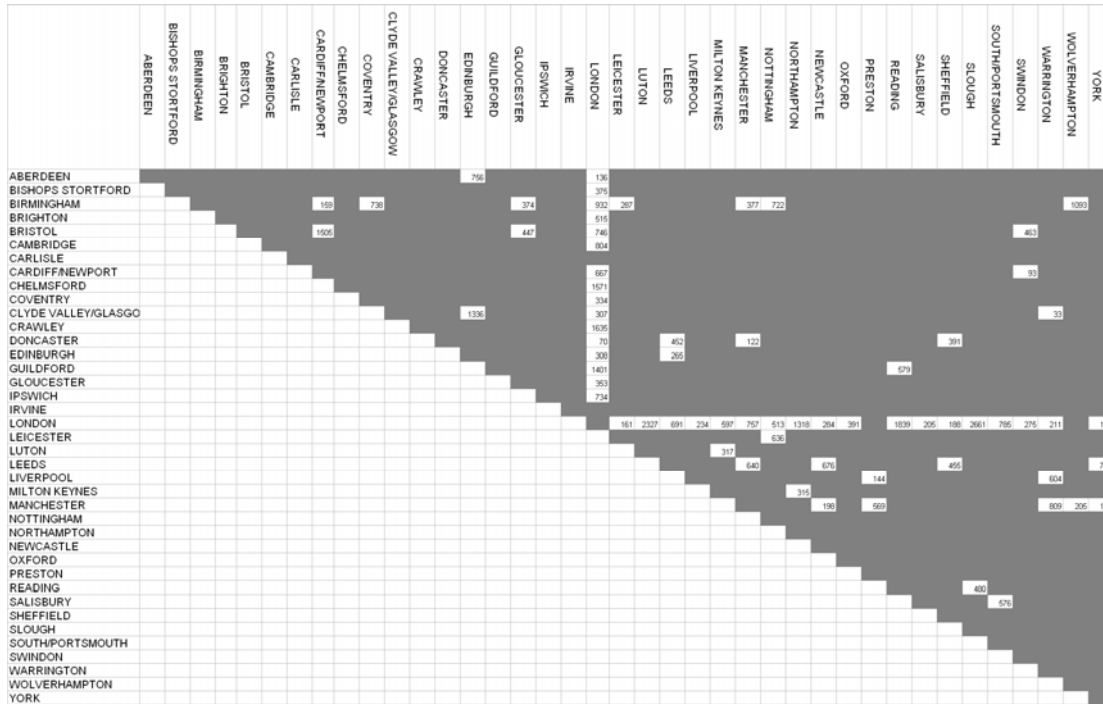
Assessment of variations in competitive conditions

6.96 We analysed whether there was any other evidence of variations in competitive conditions that might point to "local markets" for specific trunk routes. To do this we followed a similar overall approach to the one we adopted to assess competitive conditions for terminating segments, namely:

- **Identification of the relevant geographic unit:** in the case of the assessment of trunk markets, we proposed that the relevant geographic unit would be each of the 780 possible route combinations between aggregation nodes;
- **Assessment of indicators of competitive conditions for each geographic unit:** we then identified relevant indicators of competitive conditions on trunk routes and used these indicators to assess potential competition for each route. We used three proposed criteria to capture the extent of likely competition based on likely CP presence on a particular route:
 - i. that there are two or more other CPs located within 10km of at least one BT Tier 1 at both ends of the route;
 - ii. that three or more CPs including BT are selling circuits to other CPs on the route; and
 - iii. that there are ten or more circuits on the route.
- **Group together units with homogenous competitive conditions into geographic areas:** we grouped individual trunk routes together based on where the conditions of competitive are similar or sufficiently similar (as suggested by the three criteria above);
- **Conclude on relevant geographic markets:** having identified a sub-set of potentially competitive routes that would form a geographic area we then assessed whether available service share evidence suggested that competitive conditions were appreciably different for those routes.

6.97 Therefore, for those routes that we identified as potentially competitive, we looked at the available service share evidence to assess whether we could identify distinct geographic markets. We grouped individual trunk routes together based on where the conditions of competition were potentially similar or sufficiently similar. The results of this process are set out in Figure 6.2 below, where the greyed out routes showing routes excluded from our “candidate” list of potentially competitive routes.

Figure 6.2: Identification of potentially competitive routes



Source: BCMR, January 2008

6.98 The above results suggest that based on the above three criteria less than 10% of all routes are candidate “potentially competitive” routes (although this represents nearly 60% of total circuit counts). Therefore, the materiality of the “potentially competitive” trunk routes is relatively high in circuit count terms.

We assessed whether competitive conditions were appreciably different for those routes.

6.99 Having identified a sub-set of “potentially” competitive routes we then assessed whether available service share evidence⁴⁶ suggested that competitive conditions were appreciably different for those routes.

6.100 To assess potential variations in competitive conditions, we then looked at the available service share evidence. We considered that the competitive conditions did

⁴⁶ We have set out our methodology for estimating wholesale service shares in Annex 6 (paragraphs A6.24 to A6.45). In summary, as we did not obtain direct information on OCPs’ self-supply (due to OCPs not routinely recording information on how they provision individual retail circuits), we had to estimate the extent of OCP self-supply on particular routes more indirectly. To do this, we used total trunk demand arising from retail markets (based on geographic information we had on retail sold between major urban areas) and information on BT and OCP wholesale circuit sales. From this total wholesale demand, we assumed that the OCP demand not met through their wholesale purchases would be self-supply.

not vary significantly on the “potentially competitive” routes compared to the other trunk routes. For the “potentially competitive” routes, BT’s average services shares were very similar to the national picture. There were few individual routes (6 routes) where BT had a service share below 40% and we calculated that these routes only accounted for less than 4% of trunk circuits (weighted by bandwidth).

6.101 Therefore, BT’s high service share on most routes and the materiality of those routes where BT had relatively low service shares did not provide compelling evidence of the existence of local markets. Hence, taking all of these routes together, BT’s overall service share would not be very different when compared to the combined service share of all other trunk routes. In other words, we considered there was insufficient evidence of variations in competitive conditions to identify sub-national markets. Combined with the other available evidence, in particular on BT’s pricing behaviour, we considered that a national market definition was appropriate for the trunk market.

Review of responses to the January 2008 consultation

6.102 In the January 17 consultation, we asked the following question:

Question 6: Do stakeholders agree with our proposed wholesale geographic market definitions?

6.103 Only BT provided specific comments on our geographic assessment of trunk markets. Other respondents were mainly interested in the possible impact of the change to the boundary of our trunk definition, which we have already addressed in Section 5.

6.104 As discussed in Section 5, BT and other respondents also requested to clarify further on the precise scope of the AISBO market. In Section 5, we explained why we think it is better to address this issue in the context of our geographic market definition rather than in the wholesale product market definition. We therefore also provide our discussion of the implications for the AISBO market in this Section.

Geographic assessment of trunk markets

6.105 As highlighted above, only BT provided specific comments on our geographic assessment of trunk markets. In summary, BT raised three main points, which we discuss in turn below:

- it expressed concerns that the three criteria we used to identify potentially competitive routes might exclude trunk routes that were in fact competitive;
- it suggested we should identify potentially competitive routes based on evidence of CP presence at either end of a trunk route; and
- it argued that we had underestimated the impact of competition from parallel infrastructure in our trunk assessment;

Criteria used to identify potentially competitive routes

- 6.106 Turning to our analysis of competitive conditions, in BT's view, the second and third screening criteria that we used to identify a group of potentially competitive markets were not legitimate basis for assessing competition on trunk routes. BT considered that the second criterion (i.e. that three or more CPs including BT are selling circuits to other CPs on the route) ignores the importance of self-supply. BT also noted that the third criterion, based on materiality (i.e. that there are ten or more circuits on the route) is not an appropriate indicator of the existence of competition problems. BT was therefore concerned that our proposed criteria excluded a number of potentially competitive trunk routes from subsequent geographic analysis.
- 6.107 BT considered that our analysis produced results that were counter-intuitive. For example, it noted that only four of the routes from the London aggregation nodes to other aggregation nodes are highlighted as competitive using the service share analysis. It also noted that only two of those routes (London-Newcastle and London-Cardiff) are among the top 25 routes out of London in terms of CPs with a presence at both ends, i.e. those with five or more other CPs.

Alternative approach to identify potentially competitive routes

- 6.108 BT believed that rather than applying the three thresholds and market share tests in defining geographic markets for wholesale trunk segments, Ofcom should base its analysis on the number of other CPs present at both ends of a route. It considered this approach would be consistent with the Commission's rationale for removing trunk segments from the Recommendation. BT proposed that the number of routes that would then be included in a separate geographic sub-market based on different thresholds would be as follows:

Table 6.4: BT's proposals for potentially competitive routes

Number of other providers	Number of routes	Percentage of total routes
3 or more	681	87%
4 or more	567	72%
5 or more	384	49%

- 6.109 In subsequent correspondence, BT also highlighted that it might be worth analysing "Big City" routes or those routes with the largest circuit counts.

Existence of parallel routes

- 6.110 BT was also concerned that our approach to assessing competitive conditions for individual routes did not take into account the European Commission's view, expressed in the explanatory note to its Recommendation, that the existence of parallel infrastructure has made the market for trunk segments effectively competitive. In BT's view, this suggested that the existence of sufficient alternative trunk capacity should be sufficient to conclude that the trunk market was competitive.

Ofcom's response to respondents views on geographic analysis

6.111 In this part of the Section, we provide our consideration and response to BT's concerns relating to the three main issues it raised regarding our approach to the geographic analysis of trunk:

- Whether the criteria we applied excluded potentially competitive trunk routes;
- We consider whether the alternative criteria proposed by BT might be more appropriate; and
- We assess BT's comments on parallel infrastructure.

Did the criteria used exclude potentially competitive trunk routes?

6.112 Before specifically addressing BT concerns in turn below, it is worth briefly highlighting why our geographic analysis is consistent with our standard approach to geographic market definition and relevant SMP Guidelines.

We applied the three main steps to geographic market definition

6.113 Similar to the approach to geographic assessment of wholesale symmetric broadband origination, we followed three main steps:

- An assessment of potential demand-side and supply-side substitution on specific trunk routes;
- The presence of a common pricing constraints across geographic areas; and
- Whether different trunk routes might be found to be in the same relevant geographic markets to the extent that the competitive conditions in different areas are sufficient homogenous.

Demand-side and supply-side analysis could point to very narrow markets

6.114 The starting point for product market definition is an assessment of the effect of possible demand and supply-side constraints. In particular, we consider whether a SSNIP imposed by a hypothetical monopolist on an individual trunk route would be rendered unprofitable by constraints arising from demand-side substitution (switching to other wholesale trunk routes) or from supply-side substitution (from other providers entering the market to provide competing trunk on that route).

6.115 In respect of demand-side substitution, as discussed in the January 2008 consultation (see for example paragraphs 4.4-4.6 and 6.6 to 6.10) we highlighted that in general geographic demand-side substitution often points to very narrow markets. This is because communications networks generally have a fixed and pre-defined geographic presence. This means that demand-side substitution is generally unlikely because customers are unlikely to regard a circuit in one location as a good substitute for a circuit located somewhere else. We did not consider that supply-side substitution would provide a sufficient constraint in response to a SSNIP on a particular trunk route, given the significant cost and sunk nature of investments. Therefore, supply-side substitution would not support wider markets.

6.116 However, we also noted that this finding was not that clear-cut because (on some routes) CPs may be able to switch their demand to alternative indirect routings using other trunk routes.

The existence and impact of uniform price on trunk circuits does not support sub-national markets

6.117 We attached significant weight to the fact that BT had continued to apply a national uniform price on trunk circuits.

6.118 BT's trunk regulation does not prevent BT from varying prices by geography. We considered in the January 2008 consultation that the fact that BT has not selectively cut prices suggests that it does not face strong competitive pressures on particular trunk routes. The evidence suggested that a national common pricing constraint was present. Therefore, BT's pricing behaviour does not lend support to a finding of separate local trunk markets.

6.119 In our SMP assessment, we also noted that information on BT's Return on Capital Employed suggest that BT's trunk profitability has been significantly and persistently high (our most recent estimates in Section 7, suggest that BT made a 67% return). Our conclusion in the January 2008 consultation was that competitive forces in the trunk market have not constrained BT's trunk pricing.

6.120 Therefore, BT's pricing behaviour does not suggest that it faces significant competition for a particular sub-set of trunk routes. This is underlined by the fact that, even with uniform prices (that is, without cutting prices to respond to competition on some routes), BT has been able to sustain very high returns on its wholesale trunk segments, which suggests that BT can act to an appreciable extent independently of its competitors.

Assessment of the homogeneity of competitive conditions

6.121 While the existence and impact of a uniform price for trunk segments suggested a national trunk market definition, we undertook further geographic analysis. Consistent with the European SMP Guidelines on market analysis and the assessment of market power, we sought to identify different geographic areas (i.e. a group of individual trunk routes) that might be found to be in the same relevant geographic markets, where:

- Competitive conditions are sufficiently homogenous; and
- The area can be distinguished from neighbouring areas where the competitive conditions are appreciably different.

6.122 The reason for using geographic analysis based on analysis of homogeneity of competitive conditions relates to the fact that our demand and supply-side substitution suggest very narrow market definitions (780 potential individual trunk routes). It was therefore necessary to devise criteria to identify a candidate group of competitive routes to make further analysis tractable (and that is consistent with the EC guidelines).

Identifying distinct geographic areas using "screening criteria"

6.123 Our objective was therefore to identify a group of potentially competitive routes within which the competitive conditions are sufficiently homogenous and sufficiently different from other routes to suggest they belong in a separate geographic market.

6.124 As discussed above, we applied three “screening criteria”:

- i. that there are two or more other CPs located within 10km of at least one BT Tier 1 at both ends of the route;
- ii. that three or more CPs including BT are selling circuits to other CPs on the route; and
- iii. that there are ten or more circuits on the route.

6.125 The first of the above criteria looked at the number and identity of operators present at both ends of a route. In general, the number of operators in a market is accepted as an indicator of its competitiveness, though other indicators are of course also relevant. This was supplemented by a measure of actual network presence based on the number of operators selling to third parties. This was merely intended to ensure that the operators identified by the first criterion did indeed have trunk capacity on the route. Combined with the third criteria we then “screened-out” a number of routes, leaving us with a small number of routes that were potentially more competitive than other trunk routes.

The competitive conditions for trunk routes were not sufficiently different to find local markets

6.126 The SMP Guidelines require that the relevant geographic area (i.e. the group of “potentially competitive” trunk routes) should only be defined as a separate local market, where this area: “...can be distinguished from neighbouring areas where the competitive conditions are appreciably different.” As discussed in paragraph 6.99 earlier in this Section, having followed all of the above steps on geographic market definition, we did not find that the competitive conditions on this group of routes differed significantly from other routes. We concluded that it was not appropriate to identify separate local markets for a particular group of trunk routes.

6.127 Therefore, we consider that the steps we took to assess geographic markets were entirely consistent with the SMP Guidelines and in line with the three main steps that we also followed in our geographic analysis of AISBO and TISBO markets. However, one of BT’s concerns over our geographic analysis related to the particular screening criteria we applied. In particular, it expressed concerns that our criteria based on “sales to third parties” and screening-out routes on which few circuits were sold may have excluded potentially competitive trunk routes.

6.128 To address this issue, we consider whether these criteria had excluded some potentially competitive routes from our analysis. We then go on to assess the alternative criteria proposed by BT.

Further assessment of the specific “screening criteria”

6.129 In the January 2008 consultation, we used sales of circuits to third parties on particular routes to establish CP presence. We highlighted in the January 2008 consultation the importance of ensuring that CPs were actually present on particular trunk routes. In particular, we noted that the fact that an OCP has presence at either end of a particular trunk route does not necessarily mean that they have competing trunk capacity between those locations.

- 6.130 Some providers also provided us with network information. But simply looking at OCPs' network maps as a way of determining whether they have capacity on a particular route does not tell us whether any prospective capacity could easily be used to serve traditional interface trunk markets. Operators such as C&W have highlighted for example that even where they are using their own trunk circuits to supply some of their retail leased lines customers they are still reliant on BT for trunk capacity to serve other customers at the same locations. In some cases, it would require significant further investment for an OCP to replace circuits they procure from BT with their own trunk capacity.
- 6.131 Given these issues, we therefore considered that third party sales on routes would provide a simple way of identifying "potentially competitive" routes with reasonably homogeneous competitive conditions. However, the use of this criterion does not mean that we overlooked the competitive constraint arising from self-supply.
- 6.132 Firstly, the criterion is intended only to identify groups of routes with reasonably similar competitive conditions for further analysis. The extent of self-supply as well as supply to third parties has then been taken into account in the subsequent SMP analysis and in our assessment of competitive conditions on the potentially competitive routes.
- 6.133 Secondly, the criterion identifies the routes where the most active competition is likely to exist. Our finding in the January 2008 consultation was that it was not possible to identify variations in competitive conditions on the initial set of most competitive routes. It therefore should follow that if, on trunk routes where competition is potentially most intensive, competitive conditions are not found to differ significantly from other routes, this result would be unlikely to change by widening our analysis to other routes.
- 6.134 Thirdly, it is likely that, on routes on which there is significant supply to third parties (other than by BT), operators are also competing by using self-supplied trunk. It is reasonable to assume that if a CP is selling to OCPs, it is also able to self-provision trunk itself to some extent.
- 6.135 Nevertheless, we have conducted a further assessment below to ensure that our criterion is sufficiently robust. This assessment looks at each of the routes that we identified, to ensure that our proposed criterion reflects where CPs are likely to compete most intensively (and hence where the majority of self-supply would also be likely to occur).

Assessment of whether this criterion excluded potentially competitive routes

- 6.136 We might be concerned about using third party sales as a main indicator of CPs' presence on routes (and potentially competitive trunk routes) if this excluded a large proportion of circuits where BT faced genuine competition. Indeed, Figure 6.2 above shows that the number of routes we identified in the January 2008 consultation as potentially competitive was relatively small (in terms of route counts these only represent about 10% of all potential UK trunk routes).
- 6.137 However, we have assessed in more detail the potentially competitive routes we identified using our screening criteria. The evidence we present below suggests that the routes identified in the January 2008 consultation provide significant coverage in terms of the total trunk circuits sold. They also tend to correlate quite well with the way in which CPs have built their SDH/PDH networks.

6.138 Our further assessment of the “potentially competitive” routes identified in the January 2008 consultation looks at:

- Materiality of routes: what percentage of total trunk circuits counts is represented by these routes;
- Geographic reach: in terms of geographic reach, how much of the UK would these routes address; and
- Coverage by different CPs: are the same CPs present on most of the identified routes.

6.139 We discuss each of these above factors in turn below.

Materiality of routes

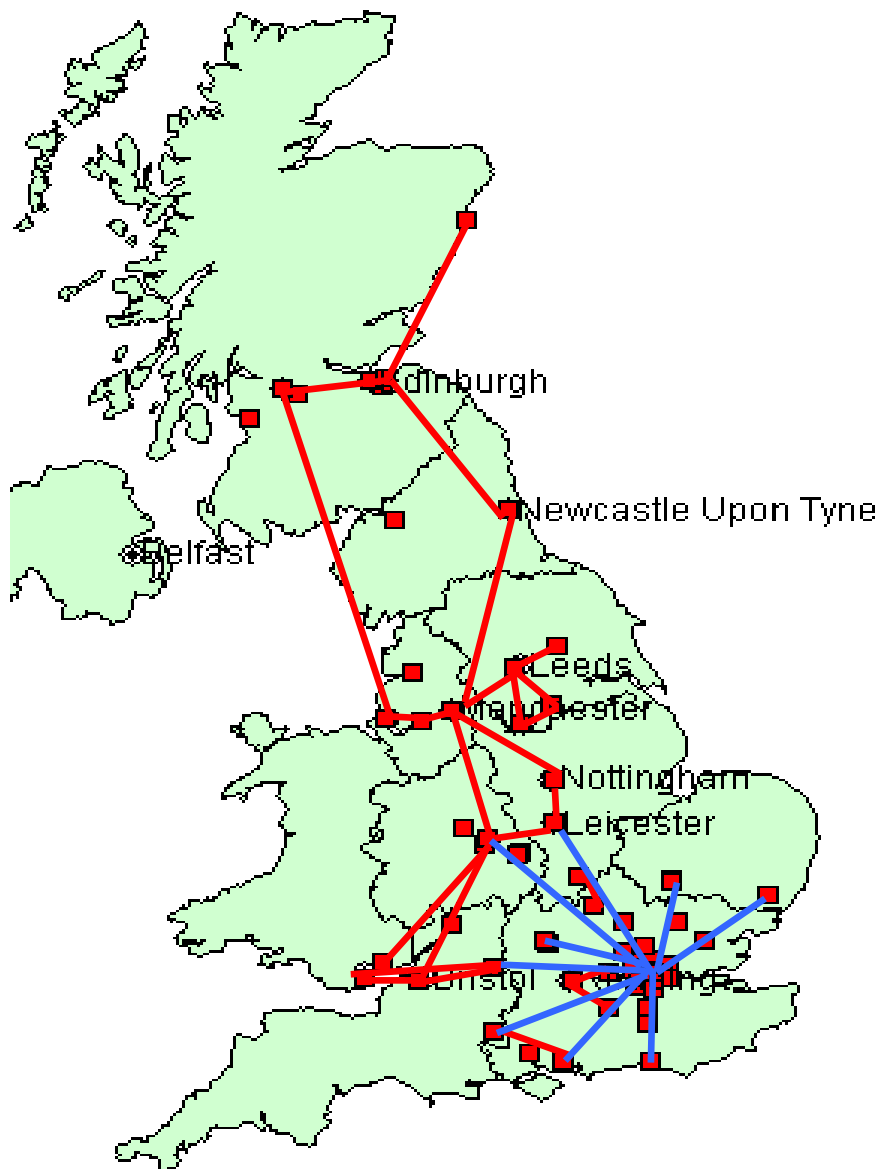
6.140 The number of routes identified as potentially competitive using our screening criteria is less than 10% of the possible 780 routes between aggregation nodes. However, the routes identified by the above analysis represent about 60% in terms of total trunk circuits’ counts. This suggests that we will have included many of the most important trunk routes. Therefore, the materiality of the “potentially competitive” trunk routes is relatively high in terms of the total numbers of circuits actually sold on those routes.

6.141 Although we excluded a relatively large number of routes, many of the routes excluded account for a small number of circuits. For 82 routes (out of the total of 780 routes analysed) there were no circuits sales recorded at all (including BT sales). A further 255 routes only have 10 or less trunk circuits required for that route.

Geographic reach

6.142 We have also mapped out the above potentially competitive routes in Figure 6.3 to show the geographic coverage of these routes. For clarity, in Figure 6.3, we have not shown all of the potentially competitive routes from London. However, if these 35 routes from the London node to other UK aggregation nodes were included, it would tend to show that our identified routes would result in a highly interconnected trunk network.

Figure 6.3: Geographic of coverage of “potentially competitive” routes (NB: does not show all routes from London)



6.143 We might be concerned if the potentially competitive routes we identified did not correlate very closely with CPs' likely network configurations. However, Figure 6.3 suggests that the trunk routes we identified would provide a good geographic coverage. In particular, it would enable the main routes between urban centres to be addressed. Indeed, it can be seen that the above routes gives quite a close match to the “double figure of eight” network configuration that might be expected within the SDH trunk market⁴⁷.

6.144 Therefore, in terms of geographic coverage our identification of potentially competitive routes seems to fit quite well with the design of many CPs' networks.

Trunk coverage by different CPs

⁴⁷ This network configuration enables the network provider to build resilience into its trunk network by ensuring that it is not liable to a single point failure.

- 6.145 In addition, we also looked at the number of routes on which an individual CP would be able to offer capacity. This is to see whether a CP with limited network reach could achieve greater trunk coverage by interconnecting with an operator other than BT to meet their trunk needs. We found that often the same alternative providers are supplying trunk on each of the potentially competitive routes we identified. This suggests, that for the potentially competitive routes, at least in terms of trunk coverage, OCPs interconnecting with one of these alternative trunk providers could potentially serve a large proportion of customers requiring trunk.
- 6.146 Therefore, it appears as if the trunk routes we identified provide a good indication as to where CPs are likely to be most actively competing. We think that the proposed identification of potentially competitive routes appears broadly correct for the purpose of our geographic analysis.
- 6.147 Our conclusion is that our second criterion used to identify potentially competitive routes is appropriate. We therefore discuss below BT's concerns over the materiality threshold that we also applied as one of our three criteria.

Materiality threshold

- 6.148 BT suggested that applying a materiality threshold as one of our criteria was not appropriate, as it is not an indicator of competitive conditions. We discuss below why we think it was necessary to apply this criterion in the context of our geographic analysis. In any case, it is important to note that the application of this criterion – when applied alongside the other criteria we used to identify competitive routes – would not have a significant impact on the number of routes excluded.
- 6.149 Looking at the routes where there are fewer than 10 circuits sold (the threshold proposed in the January document), there is quite a large number of routes with only a small number of trunk circuits.⁴⁸ At first glance, this would potentially suggest that the materiality threshold would exclude a large number of routes. However, when taken together with our other criteria, the application of the materiality threshold has an insignificant impact on the number of additional routes excluded. This is because we would have already excluded routes with low circuit counts based on the other criteria we applied.⁴⁹
- 6.150 As we explained in the January 2008 consultation, we applied this criterion because we were concerned that our service share analysis could be subject to data reliability issues associated with low circuit numbers. This could create problems if we sought to assess variations in competitive conditions based on data derived from very low circuit numbers. We therefore did not want to put too much weight on the results of trunk routes with very low circuit counts.
- 6.151 One concern might be that particular threshold we applied to exclude circuits was potentially too high. However, moving to a threshold of 5 circuits or fewer would only reduce the number of circuits excluded to 248 (compared to 255). In other words, the choice of a lower materiality threshold would not have significantly affected the number of potentially competitive routes we identified.

⁴⁸ Overall for nearly 82 routes (out of the total of 780 routes) there are no circuits sales recorded at all. A further 255 routes only have 10 or less trunk circuits required for that route. If we applied a lower threshold (for example excluding trunk routes with only 5 or less circuits – this would entail excluding 166 routes (or 248 including zero circuit routes).

⁴⁹ In particular, there is only one route out of total of 780 where there are less than 10 circuits and there are three or more CPs (including BT) “present” (i.e. based on third party sales).

6.152 There was also a range of other factors that justify excluding “smaller” routes, which were not explicitly set out in the document. As set out at the beginning of this section, competition in trunk markets is likely to be influenced by aggregation opportunities. In particular, we would expect that OCPs would construct their own infrastructure only where they are able to achieve a certain level of scale to be in a position to compete with BT’s economies of scale. Therefore, it is unlikely that the smallest sized routes (in terms of the number of circuits) would be the most competitive.

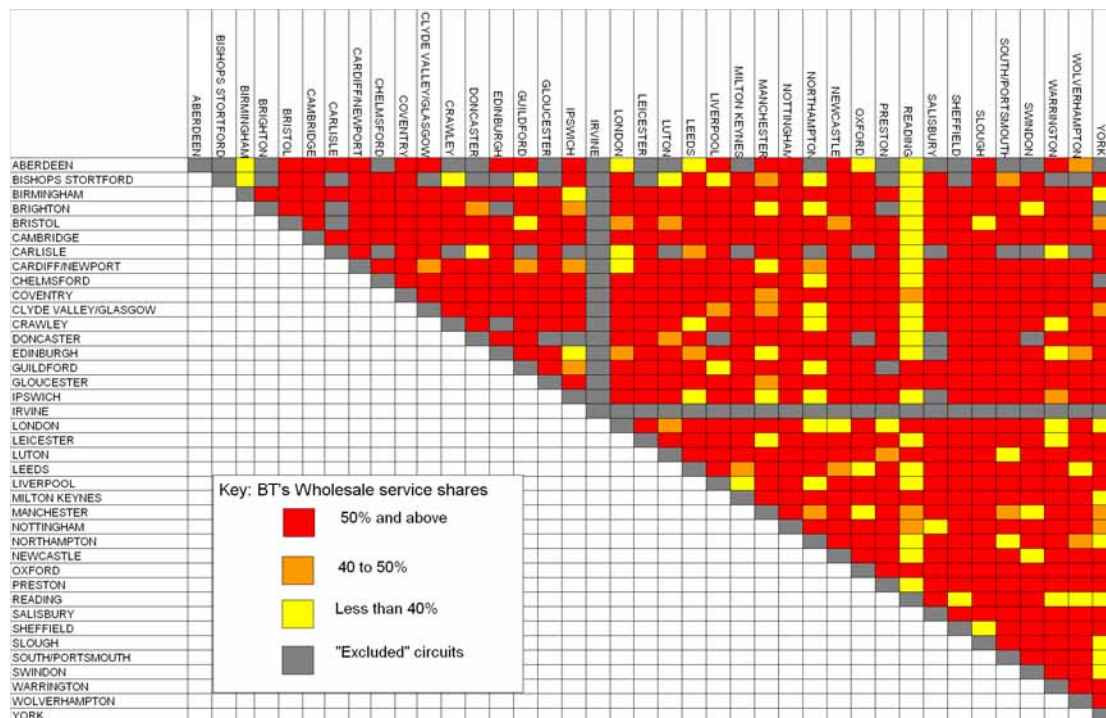
6.153 In this respect, it is interesting to note that the routes we have excluded (on the basis that CPs are not present) tend to correlate quite well with “low materiality” routes. This is consistent with the view that most CPs would be unlikely to compete where there are more limited aggregation opportunities (i.e. a very small number of circuits on that route). Therefore, this gives us further comfort that our proposed criteria used to assess potentially competitive routes are correct.

BT’s proposed alternative criteria

6.154 In BT’s response, it suggested that we should only identify potentially competitive routes based on CP presence at both ends of a trunk route. We have explained above why we think that our proposed criteria are appropriate for identifying potentially competitive routes. We also explained why routes with very low circuit counts are unlikely to be competitive or provide a sufficiently reliable picture of potential variations in competitive conditions. Nevertheless, we have also considered below the implications of BT’s proposals to identify potentially competitive routes based solely on CP presence at both ends.

6.155 As stated above, one reason why we did not rely solely on CPs’ points of presence is that it does not necessarily follow that a CP could provide trunk over the route between two ends. Nevertheless, we have presented below information on the trunk routes where three or more CPs (including BT) are present at both ends.

Figure 6.4: Routes likely to be “excluded” based on “limited” CP presence at both ends



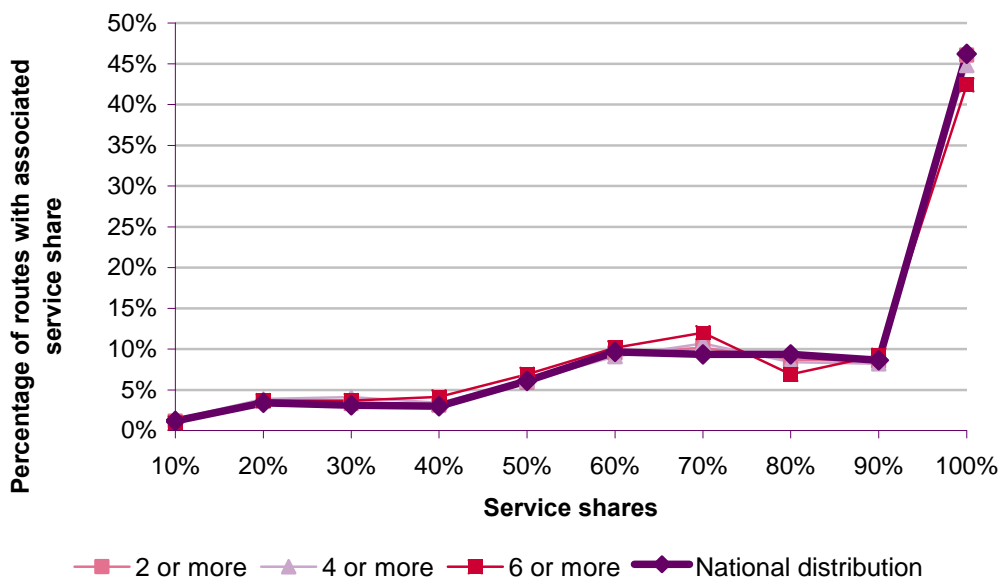
Source: Ofcom, November 2008

6.156 In Figure 6.4 above, the greyed-out boxes show the excluded routes. Other coloured boxes show the candidate “potentially competitive” routes. We have shown for each of these “candidate” routes our estimates of BT’s wholesale service shares.

6.157 The above figure suggests that if we relied on the CP presence criterion alone (i.e. based on proximity of a POP to a BT Tier 1 node at each end of a trunk route), then, in the first instance, we would identify nearly all routes as “potentially competitive”. As such, this “screening criterion” in fact screens out very few routes (i.e. very few routes are greyed out in the table). The routes identified as “potentially competitive” would then account for the greater part of the national trunk market. The analysis of competitive conditions in such a broad group of “potentially competitive” routes would then inevitably be very similar to the analysis of a single national market.

6.158 Indeed as shown below, we have looked at the distribution of service shares applying different criteria for CP presence (i.e. where two, four or six or more CPs (other than BT) are present at Tier 1 nodes at both ends of a trunk route). Figure 6.5 below shows the distribution of service shares on those routes that would qualify as “potentially” competitive (based on CP proximity of a POP to a BT Tier 1 node at each end of a trunk route) when defined on the basis of two, four and six competing CPs. We have compared this to a baseline, which shows the distribution of service shares across all trunk routes (i.e. where no screening criteria are applied). The vertical axis shows the percentage of routes on which BT’s service share is less than the figure shown on the horizontal axis. The horizontal axis shows the percentage of routes on which BT’s service share is less than the figure shown on the horizontal axis.

Figure 6.5: BT’s wholesale service share distributions associated with different CP “presence” criteria



Source: Ofcom, November 2008

6.159 The coincidence of the lines in Figure 6.5 shows that applying different assumptions for BT’s suggested criterion (i.e. changing the required number of CPs having a POP at either end of a trunk route) does not suggest significantly different distribution of service shares. In other words, BT’s share on routes with six or more competitors present at each end is not systematically higher or lower than its share on routes as

a whole, or with only four or two competitors present. The analysis of competitive conditions does not seem to be sensitive to the number of operators used in the screening criteria therefore.

Alternative potentially competitive routes

6.160 In subsequent discussions between BT and Ofcom, BT also pointed to alternative indicators of potentially competitive routes such as big city routes or the largest routes (based on total circuit counts on those routes). We have presented below BT's wholesale service shares as a convenient summary indicator of competitive conditions for these routes below.

Figure 6.6: Analysis of wholesale service shares on "Big City" routes⁵⁰

	BIRMINGHAM	BRISTOL	CARDIFF/NEWPORT	CLYDE VALLEY/GLASGOW	EDINBURGH	LONDON	LEEDS	LIVERPOOL	MANCHESTER	NOTTINGHAM	SHEFFIELD
BIRMINGHAM		59%	70%	74%	90%	59%	63%	65%	55%	70%	73%
BRISTOL			85%	59%	80%	49%	65%	56%	57%	68%	83%
CARDIFF/NEWPORT				42%	68%	31%	52%	80%	23%	65%	66%
CLYDE VALLEY/GLASGOW					70%	53%	77%	41%	47%	81%	79%
EDINBURGH						48%	47%	51%	33%	94%	83%
LONDON							55%	57%	53%	59%	72%
LEEDS								81%	75%	64%	91%
LIVERPOOL									82%	100%	52%
MANCHESTER										61%	83%
NOTTINGHAM											90%
SHEFFIELD											

Source: Ofcom, November 2008

6.161 Based on the above evidence there does not appear to be a strong case for treating big-city routes as separate geographic markets. The competitive conditions (at least as indicated by BT's wholesale service shares) appear broadly comparable to other trunk routes. As such, there does not appear to be a compelling case that sufficient variations in competitive conditions exist on the above routes to identify a separate geographic markets.

The use of service shares on individual routes

6.162 The above discussion highlighted that none of the different approaches to identifying potentially competitive routes suggest the existence of distinct local markets. For any set of candidate routes identified (using alternative competitive criteria), we do not find evidence that service share across the sub-set of "potentially competitive" routes is distinct from other trunk routes. However, this might prompt the question why we do not simply rely on service shares to inform the existence of local markets. By definition if we identified routes using this criterion then all of these routes would have relatively low service shares (both individually and combined). Therefore, one option would be to group these trunk routes together into a geographic market.

⁵⁰ The number of circuits on each route includes self-supply.

6.163 However, we explain below why we think reliance solely on services shares is not an appropriate basis to conduct geographic analysis. Notwithstanding this point, even if we were to seek to define local markets solely on the basis of service shares, the routes identified under such an approach are relatively unlikely candidates as they would not appear routes where BT faces the largest competitive constraints. In any case, the weight of evidence, such as BT's national uniform pricing and the persistently high profitability of its trunk sales does not suggest finding local markets for a group of trunk routes (even if they have low service shares).

Service shares are not a sufficient basis for identifying homogeneity of competitive conditions

6.164 We do not consider that service shares alone are a satisfactory basis for identifying local markets. As we highlighted in paragraphs 6.12 to 6.13 of the January 2008 consultation, there is some merit in using service shares, but they should not be relied on in isolation. For example, an analysis of wholesale service shares can be useful in informing whether there are geographic variations in competitive conditions. However, consistent with the approach in our Disaggregated Markets discussion document⁵¹, we need to be careful and not place too much weight on such analysis for defining the precise boundary of the market.

6.165 It should be noted that service shares are not market shares, but are estimates of the proportion of trunk services in the relevant product market provided by operators on each route. Once the precise boundary of the relevant geographic market has been defined (i.e. the group of trunk routes that share similar competitive conditions) we can then calculate operators' market shares across the whole market as part of the assessment of market power within the relevant markets.

6.166 Hence, we think that the starting point for identifying the boundary of geographic markets should bear some relationship to the underlying factors that make competition possible on those routes. This should not be based on a simple snapshot of competition that relies solely on service share data. Analysis of routes with potentially homogenous competitive conditions should be made with appeal to more robust indicators of competitive conditions.

Service shares do not appear to correlate with possible competitive indicators

6.167 Notwithstanding the above concerns, even if we did follow the approach of identifying routes with lowest service shares, the results do not appear to correlate very closely with the routes that we might expect to be the most competitive. Therefore, this does not suggest that service share on individual routes is the best metric to use to determine potential competition on a set of routes. A priori, we might expect that the lowest service shares would be seen on the highest volume big-city routes and/or routes on which demand or entry conditions would be appreciably more pro-competitive than many other routes. To consider this further we have looked at the big-city routes in Figure 6.6 and identified those routes where BT has the lowest wholesale service shares to see how well the "service share" criteria might correlate with other competitive indicators.

6.168 Using this approach, we identified five of the above big city routes with shares below 40%, which we could, hypothetically speaking, treat as candidate routes facing potentially "homogenous" competitive conditions:

⁵¹ "Disaggregated Markets: leased lines", discussion document published 28 march 2006.

- Glasgow to Cardiff
- London to Cardiff
- Manchester to Cardiff
- Edinburgh to Manchester
- Liverpool to Glasgow

- 6.169 At first sight, the above big-city routes where BT has the lowest shares would not appear to be the most likely candidates for those inter-city routes where a CP would seek to compete for trunk. For example, identifying potentially competitive routes based on “low service share” criterion would identify very few of the main routes out of London to other major cities as part of this “local market”. In addition, out of the above big-city routes, the routes on which the largest number of circuits provided are on the Edinburgh/Glasgow and Bristol/ Cardiff/Newport routes. However, these are the routes where BT has very high service shares.
- 6.170 A cursory look at the route map (as shown in Figure 6.3) suggests that the above “candidate routes” would be likely, in any case, to involve routing via intermediate points. For example, many CPs are unlikely to build trunk direct trunk capacity from Manchester to Cardiff when they could route this via existing trunk from Manchester to Birmingham and Birmingham to Cardiff. However, on these intermediate routes, we note that BT’s share is much higher.
- 6.171 We have therefore looked in more detail at the respective circuit counts on these routes. In the case of the Manchester to Cardiff route there are around 72 retail circuits⁵² that require trunk between these two ends points (40 of which are sold by OCPs). This compares to a total of 271 retail circuits sold on the Manchester to Birmingham and 155 retail circuits sold on the Birmingham to Cardiff routes. By contrast only 4 wholesale trunk circuits for the Manchester to Cardiff route are sold by BT or OCPs to third parties. This suggests that either these retail requirements to link end-user sites between Manchester and Cardiff are met through self-supplied trunk (using direct capacity) or CPs are meeting this trunk requirement via intermediate routes. For example, the CP could use intermediate capacity on Manchester-Birmingham-Cardiff. Indeed, if we look at the Manchester/Birmingham and Birmingham/Cardiff routes, as suggested above these trunk routes support greater volumes of circuits overall (including in terms of merchant sales)⁵³. And in the case of these routes, BT has far higher service shares, which would result in a combined service share across all three routes of 51%⁵⁴.
- 6.172 This might suggest that there is not a good correlation between service shares as a prior indicator of competition on individual routes. It is hard to discern any pattern, in the above analysis of service shares (for example amongst the big-city routes), which would suggest that some underlying economic factor is at work.

⁵² This number is the total (unweighted) count of retail circuits sold between Manchester and Cardiff (i.e. we have not applied any weightings to account for demand at different bandwidths).

⁵³ For example, our calculations suggest 84 wholesale circuits are sold to third parties on the Manchester-Birmingham route and 34 on the Cardiff-Birmingham (compared to only 4 wholesale circuit sales on the Cardiff-Manchester route).

⁵⁴ 51% is the estimated service share on a bandwidth-weighted basis. BT’s unweighted service share would be 57%.

6.173 This suggests that the calculated service shares for these routes may not be good indicators of greater competition. It is possible that they reflect use of indirect routing which is not captured by our method of calculating service shares on individual routes.⁵⁵ Note that, where indirect routings are economic, a route by route analysis of the trunk market may tend to overstate the extent of the competitive constraint on routes where BT's share is low, contrary to the proposition advanced by BT. This is because broadening the market to reflect indirect routings tends to bring in routes on which BT's share is higher, raising its average share. In any case, BT's uniform national pricing and high profitability does not suggest that there is strong competition on these, or other, routes.

Wider market evidence does not support using service shares

6.174 Notwithstanding our concerns over the use of service share, the key question for market power is whether BT could sustain a SSNIP above the competitive level on all trunk routes. We referred earlier to evidence on BT's profitability that suggests that BT has been able to keep its prices on trunk segments at a very high level for a sustained period.

6.175 In this respect, BT was not able to provide us with any compelling additional evidence of competitive pressures it faces on particular trunk routes. The uniform national price suggests that there is a national market and BT has not behaved any differently on particular identifiable group of trunk routes than it has on other trunk routes. On this basis, we do not consider that the above geographic analysis would support a local market definition.

Existence of parallel infrastructure

6.176 Notwithstanding BT's comments on the way in which we conducted our geographic analysis, it also raised particular concerns that the geographic analysis we conducted failed to take into account the ability of CPs to compete for individual trunk routes by using capacity either on parallel or indirect routes as an alternative. In this context, BT referred to the Explanatory Memorandum to the Commission's Recommendations that explained that the presence of parallel competing infrastructure was one of the main reasons why the leased lines trunk market is no longer on the Commission's Recommended list of markets that National Regulatory Authorities should review.

6.177 We explain below, why we think that the approach we have adopted is consistent with views expressed in the Commission's Recommendation. In particular, we have set out below why it should not automatically follow that we would find the market competitive due to the existence of alternative routes. We also explain that, the geographic analysis we undertook (based on an assessment of homogeneity in competitive conditions in line with the EC SMP Guidelines) started with narrow route-specific analysis that pointed to a national market finding. In this context, we believe

⁵⁵ We have set out our methodology for estimating wholesale service shares in Annex 6 (paragraphs A6.24 to A6.45) and as summarised in Footnote 45 above. One issue with our approach is that we have to estimate service share for individual trunk routes by inferring total OCP self-supply on a particular route from other available data (i.e. OCP self-supply is calculated as total OCP wholesale demand less their wholesale purchases). If some of BT's wholesale trunk circuits sold (e.g. wholesale circuits between Manchester to Birmingham) are used by OCPs to support retail demand for another route (e.g. Manchester to Cardiff) this may tend to understate the extent of OCP self-supply on the Manchester to Birmingham route. On the other hand, if BT is selling circuits on the Manchester to Birmingham route, which reflects indirect routing to meet retail demand between Manchester and Cardiff, then this would tend to overstate self-supply on the Manchester to Cardiff route.

that adopting, as a starting point, a wider trunk definition (e.g. due to the existence of alternative routes) is unlikely to alter this conclusion.

EC Recommendation

- 6.178 BT referred to the Explanatory Memorandum, which included reasons why the Commission considered that leased line trunk markets were no longer on its Recommended list. We have set out, below the Commission's main comments in the Explanatory Memorandum relating to trunk markets:

"... In the majority of Member States, the NRA has found the market for trunk segments of leased lines to be effectively competitive as a number of parallel networks have been established. This trend is likely to continue. Therefore the market for wholesale trunk segments of leased lines is withdrawn from the recommended list on the basis that there are no longer high and non-transitory entry barriers and that there is a clear trend towards effective competition based on parallel infrastructures.

Nevertheless a significant number of routes may continue to be served only by a single operator in particular where the route is thin, i.e. where the volume and value of traffic is lower. This will vary within and between Member States but often new entrants cannot be expected to compete with the established operator across the whole of the territory. Individual NRAs may be in a position to demonstrate that trunk segments of leased lines continue to fulfil the three criteria and are susceptible to ex ante regulation. Whilst it might be considered that competition law can address the failure on such thin routes, it is unrealistic to rely solely on competition law for as long as the number of unduplicated trunk routes in a country remains high, considering the general costing and pricing principles that would have to be applied throughout the network."

- 6.179 The above quote suggests that there may be circumstances where it is appropriate to regulate trunk routes. In particular, the Commission Recommendation links this to the fulfilment of the three criteria and explains that NRAs may be in a position to demonstrate that these markets are susceptible to ex ante regulation. As we discuss in our SMP Section, we think that the competitive conditions in the trunk market are such that we would fulfil the Commission's "three criteria test".
- 6.180 In the 2003/04 Review, we found BT to have SMP in trunk markets and since the last review (as we discuss in Section 7) there has not been evidence of significant additional OCP network investment. Even when taking into account our revised trunk market definition, we have still found BT to have SMP in the trunk markets. In this respect, the European Commission did not raise any objections following our notification to it, including our assessment of the trunk market and the three criteria test.

We have taken into account parallel infrastructure in our assessment

- 6.181 Notwithstanding the fulfilment of the three criteria, in our view, we consider that it is appropriate to follow all steps of the market review process to assess the impact of the existence of parallel routes and whether particular trunk routes are competitive. First, we need to identify appropriate product and geographic markets. Having identified the scope of the trunk market, the main purpose of this Section 6 is to

ensure that we have an appropriate geographic market definition for trunk segments. It is only once we have completed these stages, that we should examine SMP.

- 6.182 As we discussed in paragraph 6.87 and following earlier in this Section, some factors may point to fairly narrow geographic market definitions, whereby only capacity over the same trunk route (direct routing) would impose a competitive constraint on a hypothetical monopolist seeking to impose a SSNIP on a particular trunk route. Alternatively a hypothetical monopolist seeking to impose a SSNIP on a particular trunk route might be constrained by OCPs utilising capacity on alternative trunk routes (i.e. via indirect routing). We have therefore considered further below the implications of parallel infrastructure on our geographic market assessment in terms of a competitive constraint both from capacity “direct” trunk routes and capacity on “indirect” trunk routes.

Constraints from OCPs with “direct” capacity

- 6.183 To the extent that parallel infrastructure refers to evidence of OCPs able to self-supply or provide circuits to third parties on individual “direct” trunk routes, we have collected information on third party sales and estimated the potential scope of their self-supply over particular trunk routes. The competitive constraint from capacity on “direct” trunk routes therefore was included in our geographic assessment. As stated above, the available evidence suggests that competitive conditions on those trunk routes that are likely to face the most competition do not vary sufficiently to other routes to justify the definition of a separate local market.

Constraints from OCPs’ “indirect” trunk capacity

- 6.184 If parallel infrastructure (via indirect capacity) provides a material constraint on individual routes then this points in the first instance to a wider geographic market definition. This might point, for instance, to London to Manchester and London-Birmingham and Birmingham to Manchester forming a separate market (as the latter two routes could theoretically be used to provision trunk on the London to Manchester). Repeating such analysis for every trunk route might suggest a number of other routes were substitutes for each other. However, unless consolidation of the total number of potential trunk routes (780) to a smaller number resulted in only a few trunk markets, we would still be faced with analysing multiple trunk markets.
- 6.185 To overcome the problem of analysing multiple geographic routes (or groups of routes), as set out above, we have followed the standard approach to geographic market definition by assessing the homogeneity of competitive conditions. We based our analysis on a “narrow” starting point (i.e. starting with individual trunk routes and grouping together routes with similar competitive conditions). And based on this analysis, we have found that there is insufficient evidence of variations in competitive conditions to support separate geographic markets. If we were to adopt a wider set of routes as a starting point (for example that combined a group of potential alternative routes), this would not be likely to change our conclusion.
- 6.186 We do not consider that the existence of parallel routes should change our conclusions in respect of national market definition for trunk. We analysed the market using an assessment of homogeneity of competitive conditions (starting with a narrow route-specific assessment). If we had started with a wider geographic units taking groups of trunk routes together this would not have altered our conclusions.

Conclusions on geographic market assessment

6.187 We have concluded that a national market definition is appropriate for the trunk market. In the above paragraphs, we highlight the steps that we followed in reaching this conclusion are in line with our standard approach to geographic market definition (consistent with the EC Guidelines). We analysed the market using an assessment of geographic variations in competitive conditions (starting with individual routes and using our screening criteria to find a group of “potentially” competitive routes). Analysis of these routes does not suggest finding these routes in a separate geographic market (as the competitive conditions on those potentially competitive routes were not appreciably different from other routes). Looking at other criteria (to determine potentially competitive routes), such as those suggested by BT, would not change the above conclusion. Notwithstanding these points, as discussed in paragraphs 6.117 to 6.120, we think that significant weight should be attached to the fact that BT pricing behaviour does not suggest it has faced significantly different competitive pressures on particular routes. It continues to apply a uniform price and our estimated profitability suggests that trunk profitability remains very high.

Identification of aggregation nodes

6.188 In addition to the specific comments BT made on our geographic market assessment, BT also provided comments on the aggregation nodes we proposed. In particular, BT considered that conditions specific to the London area (namely the very high circuit numbers and business density) suggested that there should be more than one aggregation node.

6.189 BT also suggested a number of other locations should also be considered as qualifying as being aggregation nodes. This was on the basis that there exist possible opportunities for aggregation at these locations so that a number of CPs (in addition to BT) currently, or, in the medium term, are likely to have installed competing infrastructure.

London aggregation node

6.190 One of BT’s concerns was the identification of a single London aggregation node. It suggested that the available evidence on interconnection and the volumes of circuits between Tier 1 nodes located in London suggested that there should be more than one aggregation node.

6.191 We discuss below why it may be appropriate to identify more than one node in the London area. Having assessed the volumes of circuits in the London area and looked at further available evidence on CP interconnection, we think that there may be a case for identifying additional aggregation nodes for London. Therefore, as a next step we have looked at whether we could identify a particular sub-set of aggregation nodes within the London area.

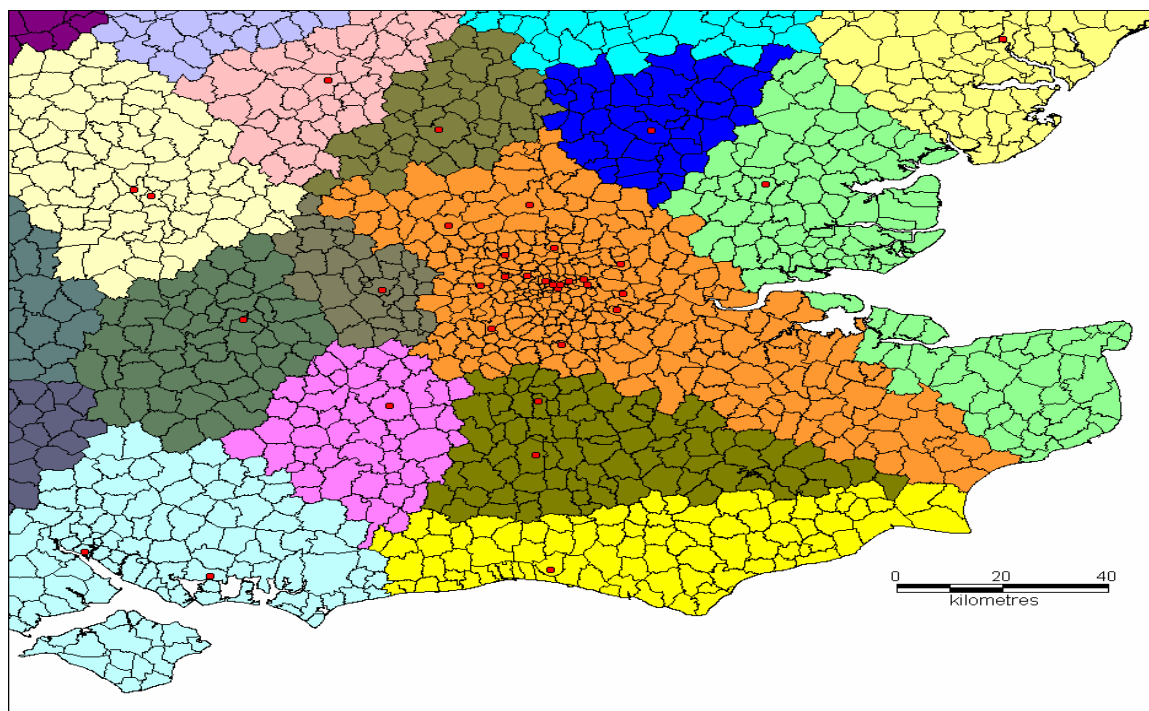
6.192 Our conclusion is that it is appropriate to identify more than one aggregation node for London. The detail of this analysis underpinning our findings is set out in Annex 7, we have presented the main results and a summary of our analysis in this section.

Why have we revisited our London aggregation node proposals

6.193 The reason for revisiting our proposals relates to the fact that the circuit volumes associated with the London area may suggest that it is worthwhile to interconnect at more than one point within the London area.

6.194 As part of BT's response to the January 2008 consultation, it highlighted that the proposed scope of the London aggregation node would be very large and we should consider defining additional nodes given the volumes of traffic in that area. To demonstrate the first of these points, BT provided us with maps showing the impact of the revised proposals. Figure 6.7 shows the catchment area that would be associated with the proposed London aggregation node.

Figure 6.7: Scope of London catchment's area following proposed revised definition



Source: BT

6.195 Figure 6.7 highlights that the potential coverage of the London aggregation node (shown by the orange area) would be relatively large (in terms of the number of postal sectors captured by this catchment's area). However, the relatively large size of the geographic areas is not necessarily only a function of our aggregation nodes approach, as the catchment's areas associated with certain BT Tier 1 nodes were already quite large⁵⁶. Instead, the key issue here is that the absolute volume of circuits associated with the London catchment's area is much higher than for other metropolitan areas. For example, traffic originating from London represents about one third of all trunk traffic.

6.196 Given the volumes of circuits in the London area, this suggests that CPs have far greater opportunities to aggregate traffic. BT's concern was that our proposal for a single London aggregation node does not appropriately capture where CPs will choose to locate their points of presence to exploit these aggregation opportunities.

⁵⁶ The coverage of the aggregation node is not entirely a result of our aggregation nodes. It partly reflects the fact that some of the existing Tier 1 node catchment areas (as shown in Figure 6.7) are already quite wide in scope. For example, number of postal sectors as far as the south coast of Kent are parented to BT's Tier 1 node located in South East London. Therefore, even if we were to identify more than one aggregation node in London, there would still be quite large catchment areas.

6.197 Indeed, in the table below we provide some estimates of the extent of interconnection at different BT Tier 1 nodes, based on the proximity of six of the most active CPs in the London area to one of the 19 Tier 1 nodes. A tick indicates the proximity of a CP to the corresponding BT Tier 1 node.

Table 6.5 : Proximity of CPs to BT's Tier 1 nodes

	CP1	CP2	CP3	CP4	CP5	CP6	TOTAL
LONDON MILE END	x	x	x	x	✓	x	1
LONDON BISHOPGATE	✓	x	x	✓	✓	x	3
FARADAY	✓	✓	✓	x	✓	✓	5
LONDON POPLAR	x	x	✓	x	✓	✓	3
LONDON HARLESDEN	x	x	✓	x	✓	x	2
LONDON MAIDA VALE	x	x	x	x	✓	x	1
LONDON MUSEUM	✓	✓	✓	✓	✓	✓	6
LONDON SOUTHBANK	✓	✓	✓	✓	✓	✓	6
LONDON COVENT GARDEN	✓	✓	x	✓	x	x	3
LONDON COLINDALE SSC	x	x	x	x	✓	✓	2
LONDON EALING SSC	✓	x	✓	x	✓	✓	4
LONDON MAIN NETWORK ELTHAM RS	x	x	x	x	✓	✓	2
LONDON ILFORD SSC	✓	x	x	x	x	✓	2
LONDON WOODGREEN SSC	x	✓	x	✓	x	✓	3
WOOLWICH	x	x	x	x	✓	x	1
LONDON POTTERS BAR	x	x	x	x	x	✓	1
LONDON CROYDON SSC	✓	✓	✓	✓	✓	✓	6
LONDON KINGSTON SSC	x	x	✓	x	✓	✓	3
LONDON WATFORD HERTS	✓	x	✓	x	x	✓	3

6.198 Table 6.5 shows information on CPs points of presence in the London area. In the above table, where any of these POPs were within 1km of a BT Tier 1 node, we assumed that this might suggest that the CP is interconnected at the Tier 1 node in close proximity. We cannot be entirely certain that a CP would be interconnected at BT Tier 1 nodes solely based on this proximity assumption⁵⁷. In addition, not all CP POPs are used as major aggregation points for trunk traffic associated with the traditional interface market. Nevertheless, the above table does suggest that CPs have POPs in more than one location across the London area. For example, six CPs have a POP within 1km of each of the Croydon, Southbank and Museum nodes. This supports the view that CPs will choose to have major aggregation points at more than one location in the London area.

6.199 As stated above, the volumes of traffic in the London area are far in excess of those seen in other metropolitan areas. This means that the factors we used in our January 2008 consultation to determine relevant aggregation nodes across the rest of the UK might be less applicable to the London area. And as suggested by Table 6.5 above, the available evidence we have looked at on potential interconnection also supports this.

6.200 In the next section, we therefore revisit our January proposals for the London area. In particular, we look in more detail at the potential relationship between the proximity of nodes to each other and the volumes of traffic as well as available evidence on interconnection we then assess whether we should identify additional nodes for the London area.

⁵⁷ In some cases, a CP's POP could be a greater distance from a BT node; the CPs POP may be interconnected to another Tier 1 node (also in close proximity). Therefore, we cannot be certain that a CP will be interconnected at the Tier 1 nodes we have identified.

Methodology used in the January 2008 consultation to determine aggregation nodes

6.201 As explained in paragraph 6.77 earlier in this Section, in the January 2008 consultation we highlighted CP's decision to interconnect at a particular node relates to two key factors:

- the volume of circuits potentially served by that node; and
- the distance to the next nearest node.

6.202 Reflecting this relationship, we used "proximity assumptions" to group together nodes within a certain proximity of each other depending on the volumes of traffic at those nodes. For the London area, we assumed that it would be appropriate to group together any Tier 1 nodes within 10-15km of each other (as this geographic area was associated with high volumes of traffic). The implication of this is that an OCP would not need to interconnect at a particular node if it was already connected at another with 10-15km. As shown in Table 6.6, this resulted in us grouping together 19 Tier 1 nodes in the London area.

Table 6.6: Proximity of London nodes (using 15km radius)

TIER 1 NODES WITHIN LONDON AGGREGATION NODE	
FARADAY	MAIN NETWORK ELTHAM RS
SOUTHBANK	WOOLWICH
BISHOPGATE	MILE END
COVENT GARDEN	POPLAR
MAIDA VALE	POTTERS BAR
MUSEUM	WOODGREEN SSC
COLINDALE SSC	CROYDON SSC
EALING SSC	KINGSTON SSC
HARLESDEN	WATFORD HERTS
ILFORD SSC	

6.203 The above table represents the nodes that we grouped together based on a 15km proximity to the next nearest node⁵⁸. As stated above, BT's concern is that the scope of the proposed London aggregation node is too wide. It considered that there are far greater aggregation opportunities given the volumes of traffic in the London area. This argument is equivalent to saying that CPs are likely to locate at a greater number of interconnection points within London even if those points are relatively close to each other. In other words, we should potentially adopt shorter "proximity assumptions".

6.204 For other parts of the UK, the 15km "proximity assumptions" we used appeared to correlate closely with the information we had on CPs' interconnection decisions. So, for example, in the rest of the UK we grouped together multiple BT Tier 1 nodes in the largest population centres such as Birmingham or Edinburgh. When we checked this information against the estimates we have of actual CP interconnection, the

⁵⁸ Starting from a central London location (i.e. Faraday node), we assessed which nodes were within 15km of this node. For example, the Southbank node is within 15km of Faraday and therefore we grouped this node with the Faraday node. We then repeated this process (i.e. grouping any nodes within 15km of either Southbank or Faraday) until we had grouped together all nodes within 15km of each other. This resulted in the inclusion of Watford and Potters Bar in the North and Kingston and Croydon in the South.

results tended to agree with aggregation nodes we identified using our “proximity assumptions”.

6.205 However, we think that a more detailed assessment of the London area appears warranted. This is because far high volumes of circuits (in London) might be associated with far shorter proximity assumptions. Furthermore, we have additional information on CP interconnection (as shown in Table 6.5 above) and BT’s build decisions for its 21CN, which also suggest a revision to our January proposals.

Further analysis to determine aggregation nodes in London

6.206 In Annex 7, we have set out more detailed analysis and a range of supporting evidence to determine an appropriate number of London aggregation nodes: This analysis looks at:

- The relationship between aggregation opportunities/proximity of nodes: we have identified an appropriate proximity assumption for each London node given the volumes of circuits served by that node. We have therefore sought to model more explicitly the relationship between the proximity of existing nodes and volumes of traffic. We then use these proximity assumptions to determine possible aggregation nodes;
- Actual interconnection: we undertook an assessment of the evidence on actual CPs’ interconnection and network build decisions that have taken place. The available evidence suggests a sufficiently strong coincidence in the aggregation nodes we identify and OCP’s network build decisions.
- BT’s future network plans: BT’s 21CN has meant that BT has had to reassess its own network configuration. As the 21CN will potentially support (among other things) TDM-based services, BT’s decisions over where it will locate major 21CN metronodes might therefore provide an indicative view as to where key aggregation points might be.

6.207 In Annex 7 we have therefore undertaken more detailed analysis to derive appropriate proximity assumptions, however, the overall process used to identify aggregation nodes is the same as we identified in the January 2008 consultation. In both the January 2008 consultation and in this Final Statement we are using our best view of an appropriate “proximity” assumption for each Tier 1 node to assess whether we should identify a consolidated list of aggregation nodes. In both cases, we have verified the results of this “bottom-up” approach by looking, in parallel, at available evidence on interconnection in the London area.

Conclusions for London aggregation nodes

6.208 The proximity analysis and available evidence on the points in London where CPs have interconnected suggests that we identify eight separate aggregation nodes for the London area. Our final conclusions for the London area are set out in Table 6.7 below.

Table 6.7: Scope of London catchment areas following proposed revised definition

CURRENT TIER 1 NODES	FINAL CONCLUSIONS
LONDON FARADAY	LONDON CENTRAL
LONDON SOUTHBANK	
LONDON BISHOPGATE	
LONDON COVENT GARDEN	
LONDON MAIDA VALE	
LONDON MUSEUM	
LONDON COLINDALE SSC	LONDON WEST
LONDON EALING SSC	
LONDON HARLESDEN	
LONDON ILFORD SSC	LONDON EAST
LONDON MAIN NETWORK ELTHAM RS	
LONDON WOOLWICH	
LONDON MILE END	LONDON DOCKLANDS
LONDON POPLAR	
LONDON POTTERS BAR	LONDON NORTH
LONDON WOODGREEN SSC	
LONDON CROYDON SSC	CROYDON
LONDON KINGSTON SSC	KINGSTON
LONDON WATFORD HERTS	WATFORD

Source: Ofcom, November 2008

6.209 As stated above, our final conclusions are based on our bottom-up modelling (in Annex 7), which takes into account the potential aggregation opportunities at different London nodes and the extent to which a CP might build out to additional nodes to pick-up traffic sooner. We also looked at available evidence on the points in London where CPs are likely to interconnect. Furthermore, we took into account the consolidated list of metronodes that BT is developing as part of its 21CN programme.

Additional London aggregation nodes do not affect the finding of national trunk markets

6.210 As we have identified additional London aggregation nodes, we have also revisited our geographic analysis to ensure the national trunk geographic market definition remains appropriate. The geographic analysis we conducted in the January 2008 consultation used available information on trunk routes between 40 aggregation nodes, including analysis of competitive conditions on routes from a single London aggregation node to other aggregation nodes in the rest of the UK. However, with more than one aggregation node in London, the number of trunk routes out of London is potentially significantly increased (in the limit, the definition of an additional aggregation node could also imply the definition of an additional trunk route to each of the other UK nodes). We have therefore revisited our geographic analysis to assess whether there are significant variations in competitive conditions on trunk routes from the new London aggregation nodes which could affect market definition.

6.211 An examination of the service shares (weighted by wholesale circuit counts) suggests that BT's average wholesale service shares across all routes from one of the eight London aggregation nodes to any other aggregation node are high.

Table 6.8: Summary BT's overall wholesale service shares

Aggregation nodes	Weighted average BT wholesale service shares on trunk routes to other aggregation nodes
CROYDON	91%
KINGSTON	89%
LONDON CENTRAL	75%
LONDON NORTH	84%
LONDON EAST	89%
LONDON WEST	82%
LONDON DOCKLANDS	65%
WATFORD	65%

Source: Ofcom, November 2008

6.212 Table 6.8 shows that there is some variation in BT's share depending on the aggregation node. However, in all cases, BT's share remains well above 50%.

6.213 On face value, this does not suggest that the greater number of aggregation nodes would alter our findings of a national market. However, to establish that this is the case, we need to examine this issue in more detail. As set out in paragraph 6.113, our standard approach to geographic analysis consists of three main steps:

- An assessment of potential demand-side and supply-side substitution on specific trunk routes;
- The presence of a common pricing constraints across geographic areas; and
- Whether competitive conditions on different trunk routes are sufficiently homogenous for them to be found to be in the same relevant geographic market.

Demand-side and supply-side substitution

6.214 As discussed in paragraphs 6.114 to 6.116, demand-side and supply-side substitution in the context of geographic market definition often suggests very narrow market definitions. This is because communications networks generally have a fixed and pre-defined geographic presence. This means that demand-side substitution is generally unlikely because customers are unlikely to regard a circuit in one location as a good substitute for a circuit located somewhere else.

6.215 However, some demand-side substitution between trunk routes may be possible through indirect routing. Different trunk routes may be substitutes for each other because it may be possible – and economic- to reach a given destination by more than one route, going through different intermediate points. Simply on the basis of the volume of circuits in London and the relatively short distances between the London aggregation nodes, it seems likely that some competition using indirect routing will occur within London. Many London leased line customers may therefore have a choice between OCPs purchasing trunk from different London aggregation nodes.

6.216 Therefore, if we assess competitive conditions for trunk routes from London to elsewhere in the UK, it could still be appropriate to look at the competitive conditions for a combined group of trunk routes. However, grouping routes from different aggregation nodes would tend to produce similar results to looking at competitive

conditions based on a single London aggregation node. We conducted analysis of competitive conditions based on a single London aggregation node in the January 2008 consultation. Therefore, if such demand-side substitution opportunities exist, the definition of additional nodes would not be likely to affect our findings of a national market.

- 6.217 Therefore, demand-side substitution may point to the inclusion of trunk routes from each of the London aggregation nodes within a broad market..

Assessment of BT's pricing behaviour

- 6.218 Even though we have identified additional aggregation nodes in London, this does not alter our assessment of BT's pricing behaviour. As discussed in paragraphs 6.117 to 6.120, we attached significant weight to the fact that BT had continued to apply a national uniform price on trunk circuits. BT's pricing behaviour does not suggest that it faces significant competition for a particular sub-set of trunk routes (including trunk routes to/from London). This is underlined by the fact that BT has been able to sustain very high returns on its wholesale trunk segments, which suggests that BT can act to an appreciable extent independently of its competitors (including on London trunk routes however these are defined).

Assessment of the homogeneity of competitive conditions

- 6.219 While the existence and impact of a uniform price for trunk segments suggests a national trunk market definition, we have re-examined whether the identification of additional London aggregation nodes would affect our assessment of the homogeneity of competitive conditions. We have followed the steps set out in paragraphs 6.121 to 6.128 above.
- 6.220 In summary, starting with the 8 London aggregation nodes, there would be up to 360 possible trunk routes (from one of these nodes to any 45 other aggregation nodes). Using these 360 possible routes, we applied our "screening criteria" (discussed in paragraphs 6.123 to 6.125 above) to identify candidate "potentially competitive routes". We then assessed BT's wholesale service shares on the "potentially competitive" routes to see if the competitive conditions are appreciably different to other trunk routes.
- 6.221 The outcome of this analysis is that BT's weighted average wholesale service share across all of the "potentially competitive" London routes (including trunk routes from London to elsewhere in the UK) is 76%. Therefore, if we combined these potentially competitive routes with other routes identified as potentially competitive (as shown in Figure 6.2 above) the combined service share would not be appreciably different to the remainder trunk routes. In other words, the identification of additional aggregation nodes would not result in finding a group of "potentially competitive" routes with significantly different competitive conditions (based on a comparison of service shares to other trunk routes). Therefore, our revised analysis does not support finding a separate geographic market.
- 6.222 We have concluded that a national market definition for trunk remains appropriate and is unaffected by the identification of additional London aggregation nodes. This assessment is based on the possibility of demand-side substitution, BT's pricing behaviour and our additional analysis of the homogeneity of competitive conditions on trunk routes.

Identification of additional nodes outside of London

- 6.223 In its response to the January 2008 consultation, BT suggested that there could be scope to identify additional nodes to add to our proposed list of 40 aggregation nodes in the consultation. It put forward a proposed list of nodes based on the location of some of its new metronodes, which it thought would be points on the network where CPs would also be likely to locate to pick-up TDM traffic. We have set out below, why we think it is not appropriate – at this stage - to identify additional nodes for the TI trunk market.
- 6.224 In the January 2008 consultation, the key reason for identifying aggregation nodes was the concern that the scope of the existing trunk market definition based on Tier 1 nodes was too wide. Our assessment is that the available evidence suggests CPs have not built out to all Tier 1 nodes. On this basis, we do not think it would be appropriate to widen the scope of the trunk market further.
- 6.225 If we identified new nodes, it is not clear that OCPs would respond to this by investing in trunk given the likely overall decline in demand in the traditional interface markets and in a market where BT has a large share of retail market demand. As stated previously, unless there is sufficient prospective traditional interface traffic to justify further interconnection points, OCPs will face an economic bottleneck beyond our identified aggregation nodes. It would therefore not be appropriate to identify further nodes if this is not consistent with sufficient aggregation opportunities.
- 6.226 The consolidation of 67 Tier 1 nodes to a smaller number of aggregation nodes reflects available evidence on where OCPs are located and where aggregation opportunities are likely to exist over the timeframe of our review. Many of the CPs we have spoken to as part of our consultations have suggested that they have invested as far as they are likely to in network equipment to support SDH trunk networks. This reflects a range of factors, including: the fact that in their view further aggregation opportunities are more limited; uncertainty over market developments such as 21CN over the next few years; and their expectations of the retail TI market decline. Therefore, we think that we have appropriately captured the scope of the trunk market.
- 6.227 One market development, which could extend the scope of the SDH trunk market, could be OCPs future investment in interconnection at BT metronodes to pick up Ethernet/broadband traffic. If a CP has already invested to pick-up other traffic, the additional (incremental) costs of investing in additional interconnection to pick-up its SDH traffic would be relatively inexpensive. However, as we concluded in Section 5, we have found SDH trunk in a separate market to other forms of core conveyance. In other words, we do not consider that convergence in SDH trunk and other conveyance markets is likely to occur to an appreciable extent in the timeframe of this market review.
- 6.228 We highlighted that the presence of OCPs' alternative NGN/conveyance networks does not necessarily mean that they could easily switch to using that network to pick-up SDH/PDH traffic. Even if it were possible, many OCPs have highlighted the decisions that they have taken in respect of routing of terminating segments are largely now historic and there would be limited benefit in undertaking investments to re-route their circuits so that they could groom that traffic earlier. CPs are therefore unlikely to roll-out their SDH trunk networks further particularly given 21CN and the potential migration to NGN products and the uncertainty this creates.

- 6.229 The above discussion suggests that we should not identify, at this time, additional aggregation nodes, where these aggregation nodes do not coincide with existing Tier 1 node location(s). Following this logic, however, we have decided to amend slightly our aggregation node proposals. In particular, we no longer propose to identify a new aggregation node within Belfast.
- 6.230 Unlike other aggregation nodes, the Belfast area does not currently have a Tier 1 node at all. Therefore, we think that extending the scope of the trunk market by identifying an additional node within Belfast might be inappropriate. Having considered the number of ends potentially served from mainland UK to Belfast, it appears that there a relatively low volumes of circuits. In addition, few CPs have infrastructure to serve the traditional interface market in Northern Ireland. This suggests that it is unlikely to justify identification of an additional aggregation node, as CPs are not likely to build out further to this location to pick-up TI traffic earlier.

Forward-looking assessment

- 6.231 Clearly our intention is to keep our proposed market definitions under review as developments may occur that increase the scope for interconnection deeper within the network. If this is the case, then the trunk market might widen in scope. But for the time being, we think that native TDM-based interconnection at additional metronodes is unlikely to emerge on a sufficient scale to identify any more nodes for the SDH-trunk market. And if demand for native TDM-based products grows in particular localities, at the time of the next market review, we can consider whether we should add additional aggregation node locations. However, at this point in time, we think that this would need to be based on evidence of further network roll-out by communications providers for TDM-based products or other significant market developments we have not been able to anticipate in our analysis.

Conclusions

- 6.232 We therefore conclude that the list of aggregation nodes proposed in our January 2008 consultation should be amended slightly to exclude the Belfast aggregation node and also to include eight separate aggregation nodes for the London area. Our final 46 aggregation node proposals are set out in Table 6.9 below.

Table 6.9: Final TI aggregation nodes

ABERDEEN	CROYDON	LONDON CENTRAL	READING
BIRMINGHAM	DONCASTER	LONDON WEST	SALISBURY
BISHOPS STORTFORD	EDINBURGH	LONDON EAST	SHEFFIELD
BRIGHTON	GLOUCESTER	LONDON DOCKLANDS	SLOUGH
BRISTOL	GUILDFORD	LONDON NORTH	SOUTHAMPTON/PORTSMOUTH
CAMBRIDGE	IPSWICH	MANCHESTER	SWINDON
CARDIFF/NEWPORT	IRVINE	MILTON KEYNES	WARRINGTON
CARLISLE	KINGSTON	NEWCASTLE	WATFORD
CHELMSFORD	LEEDS	NORTHAMPTON	WOLVERHAMPTON
GLASGOW/CLYDE VALLEY	LEICESTER	NOTTINGHAM	YORK
COVENTRY	LIVERPOOL	OXFORD/COWLEY	
CRAWLEY	LUTON	PRESTON	

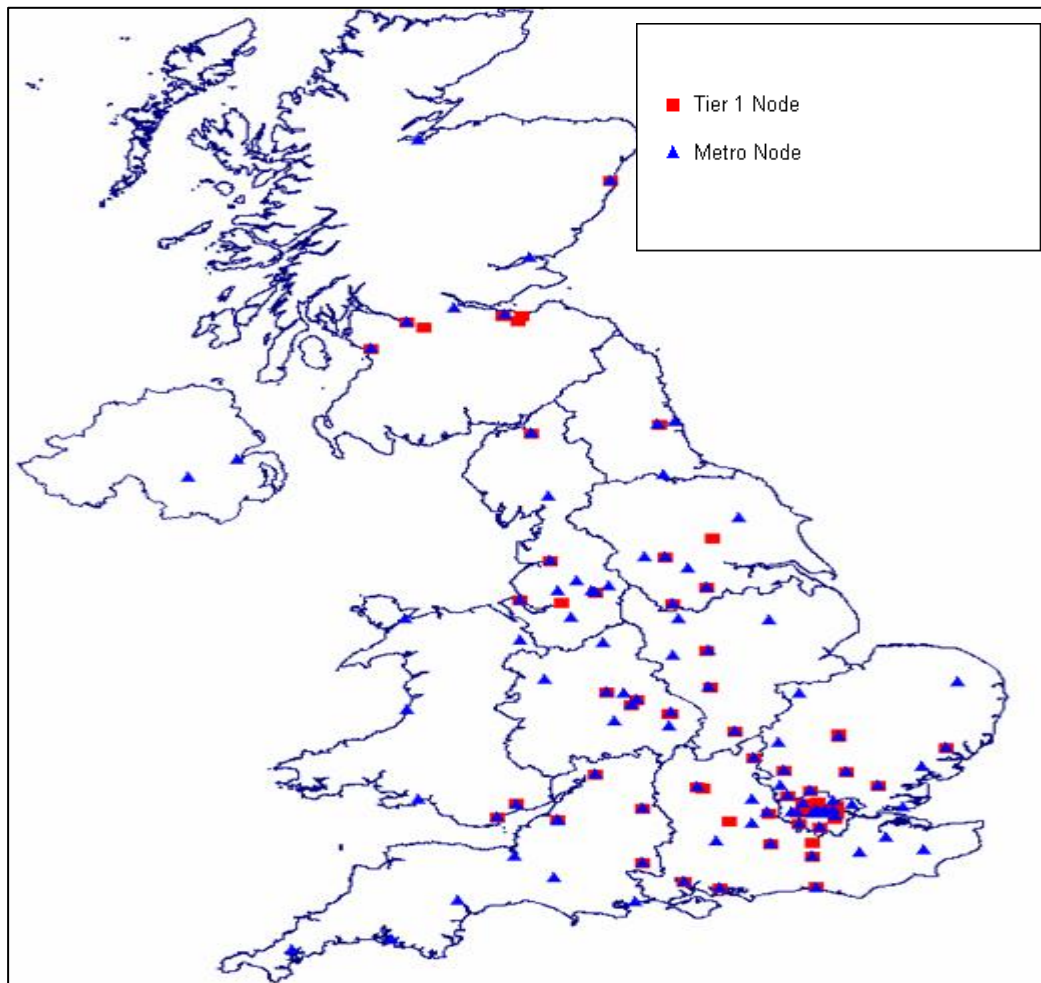
Source: Ofcom, November 2008

Implications for the AISBO market

- 6.233 As stated in Section 5, some CPs have also requested further clarity in respect of the precise scope of the AISBO market.

- 6.234 In the January 2008 consultation, due to the nature of products sold in the AI market, we found that there was not currently a separate AI trunk market, so by definition any circuit data used to calculate market shares for BT and OCP would clearly only relate to the terminating markets. Therefore, for the purpose of our SMP assessment, we did not seek to differentiate between trunk and terminating circuits.
- 6.235 However, it is necessary to consider the precise scope of BT's AISBO market within this review as we are proposing to set regulatory remedies on an appropriately forward-looking basis. There is a prospect that AI trunk services could emerge in the timeframe of this review (to some degree) and we would not want our regulation to extend to these services. As we have found BT to have SMP on its AISBO services, we need to provide greater clarity as to where BT's obligations to provide AISBO services should end.
- 6.236 In Annex 7, we provide our geographic analysis of the scope of the AISBO market. This analysis is based on a similar assessment of aggregation nodes appropriate for the AI market, while reflecting any differences to the TI market. In particular, for the AI market, the location of key nodes on BT's network is likely to be informed by its 21CN roll-out plans. BT's network roll-out plans for its 21-CN would consist of 106 metronodes, which it considers are the nodes should be broadly equivalent in the network hierarchy to the 67 Tier 1 nodes on its SDH/PDH network.
- 6.237 Clearly, the approach we adopted for assessing the break in trunk and terminating segments (i.e. the aggregation nodes concept) as discussed above provides a useful starting point for identifying the nature of economic bottlenecks faced by OCPs for the AISBO market and the potential scope of OCP interconnection.
- 6.238 For similar reasons seen in the TI market where CPs have historically not interconnected at all 67 Tier 1 nodes, OCPs are unlikely, initially at least, to interconnect at the full 106 metronodes. In the SDH trunk market, we have explained that OCPs require sufficient aggregation opportunities to make it worthwhile to interconnect at BT Tier 1 nodes. The same will apply in the case of the AI market, where OCPs decisions over where to interconnect will also be informed by the points on the network where there are aggregation opportunities. As such an OCP is unlikely to locate interconnection points in remote metronode locations where business or residential voice traffic is limited.
- 6.239 We have taken as a starting point the aggregation nodes we identified for the TI market. The volume of circuits sold in the TI market is closely correlated to the locations of businesses and key population centres. And these locations (i.e. where business demand is likely to be highest) are unlikely to differ fundamentally for AI services. Indeed, many of BT's metronodes are at identical (or nearly identical) locations to its Tier 1 nodes. The location of BT Tier 1 nodes and its metronodes are shown below.

Figure 6.8: Comparison of BT's Tier 1 and metronodes



Source: Ofcom, November 2008

6.240 Given that many metronodes coincide with Tier 1 nodes and the aggregation nodes we identified for the TI market this justifies taking the TI aggregation nodes as our starting point. However, there some differences are still likely to arise between the aggregation nodes for the TI market and those for the AI market. In particular:

- BT has had an opportunity to re-assess the location of some of its core nodes for its 21CN. This has entailed it relocating and consolidating some nodes (particularly in the London area) but also adding a number of additional nodes (particularly in South-East and South-West England).
- OCPs may interconnect at a greater number of metronodes than they would for the TI market. This reflects the possible greater scope to pick-up Ethernet traffic alongside voice and broadband.

6.241 As stated above, we took as our starting point the aggregation nodes identified for the traditional interface market. However, as explained in Annex 7 we also identified a further 10 metronode locations that could be classified as new aggregation nodes. We have concluded these it is appropriate to identify these as additional nodes based on information BT has provided us on potential OCP interconnection opportunities at these sites and the possible concentration of different types of traffic in those locations. In particular, given the nature of demand for AISBO services

(which includes demand for leased lines to serve retail Ethernet services as well as LLU backhaul), this suggests a number of new aggregation node locations.

6.242 In the light of this analysis, described in more detail in Annex 7, we set out in Table 6.9 below our final list of aggregation nodes.

Table 6.10: Final list of Alternative interface aggregation nodes

ABERDEEN	DERBY	LEICESTER	PETERBOROUGH
BASINGSTOKE	DONCASTER	LIVERPOOL	PRESTON
BELFAST	EXETER	LONDON*	READING (BRACKNELL METRONODE)
BISHOPS STORTFORD	EDINBURGH	LUTON	SALISBURY
BIRMINGHAM	FALKIRK	MAIDSTONE	SHEFFIELD
BRIGHTON	GLASGOW/ CLYDE VALLEY	DARLINGTON / STOCKTON / MIDDLESBROUGH	SLOUGH
BRISTOL	GLOUCESTER	MANCHESTER	SOUTHAMPTON/PORHSMOUTH
CAMBRIDGE	GUILDFORD	MILTON KEYNES	STOKE
CARLISLE	IPSWICH	NEWCASTLE	SWINDON
CHELMSFORD	IRVINE	NEWPORT/CARDIFF	WARRINGTON
COVENTRY	KINGSTON	NORTHAMPTON	WATFORD
CRAWLEY	KENDAL	NOTTINGHAM	WOLVERHAMPTON
CROYDON	LEEDS	OXFORD	YORK (MALTON METRONODE)

*LONDON AREA: SEPARATE AGGREGATION NODES FOR DOCKLANDS, CENTRAL, NORTH, EAST, WEST

Source: Ofcom, November 2008

6.243 As shown in Table 6.10, we have identified an additional 10 aggregation node locations for the AI market. The full mapping of relevant BT metronodes to one of these 56 aggregation nodes is set out in full in Annex 8.

6.244 We explain in more detail in Annex 7 our thinking behind the identification of the additional AI nodes. Similar to our analysis for the TI market, the ability of OCPs to exploit economies of scope and scale is key to understanding where the key aggregation nodes reside for the AI market.

Implications of identifying AI aggregation nodes for AISBO SMP obligations

6.245 As set out above, we have proposed to identify AI aggregation nodes for the purpose of clarifying BT's SMP obligations in respect of AISBO markets. We have discussed in this Section the identification of the relevant AI aggregation nodes as this was reliant on relevant geographic markets analysis. In our remedies Section 8, we provide further detail as to how the aggregation nodes we have identified would then be used to frame BT's SMP obligations for the relevant AISBO market (i.e. services up to and including 1 Gigabit).

6.246 In summary, however, the SMP network access conditions would include a requirement for BT to meet any reasonable request for a terminating segment from an end-user (or for LLU backhaul from a co-location facility) to an interconnection point at the nearest aggregation node (i.e. a relevant nominated metronode that falls within one of the above aggregation nodes). As there are a number of detailed issues associated with this proposed network access remedy, we have discussed in the remedies section how we would expect to apply BT's obligations for the AISBO market.

Conclusions

6.247 In this Section, we have set out our responses to comments made in response to our January and July 2008 consultations on issues related to our wholesale geographic market definition proposals. Based on our analysis set out in the January and July 2008 consultations and our consideration of the responses set out above we consider appropriate to identify relevant geographic markets for the wholesale product markets defined in Section 5 as summarised in Table 6.10 below.

Table 6.11: Summary of geographic market definitions

Wholesale product market	Proposed geographic definition
Low bandwidth TISBO	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
High bandwidth TISBO	<ul style="list-style-type: none"> • The UK (excluding the Hull area and the CELA); • The CELA; and • The Hull area
Very high bandwidth 155Mbit/s TISBO	<ul style="list-style-type: none"> • The UK (excluding the Hull area and the CELA); • The CELA; and • The Hull area
Very high bandwidth 622Mbit/s and above TISBO	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
Low bandwidth AISBO	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
High bandwidth AISBO	<ul style="list-style-type: none"> • The UK (excluding the Hull area); and • The Hull area
Wholesale trunk segments	<ul style="list-style-type: none"> • The UK

6.248 A list of the postal sectors which make up the CELA market for the high bandwidth TISBO and the very high bandwidth 155Mbit/s TISBO markets is included in Annex 8.

6.249 The relevant scope of the wholesale TISBO and trunk segments market and the AISBO markets in Table 6.10 depends on the break between trunk and symmetric broadband origination as identified by our aggregation nodes. Table 6.12 and Table

6.13 below set out the full list of aggregation nodes for, respectively, the TI markets and associate Tier 1 nodes, and the AI markets and associated Metro nodes.

Table 6.12 List of aggregation nodes and associated Tier 1 nodes corresponding to TI markets

FINAL LIST OF TRADITIONAL INTERFACE "AGGREGATION NODES"	Corresponding Tier 1 nodes	FINAL LIST OF TRADITIONAL INTERFACE "AGGREGATION NODES"	Corresponding Tier 1 nodes
ABERDEEN	ABERDEEN CENTRAL NODE	LONDON CENTRAL	LONDON FARADAY
BIRMINGHAM	BIRMINGHAM		LONDON SOUTHBANK
BISHOPS STORTFORD	BIRMINGHAM ERDINGTON		LONDON BISHOPGATE
BRIGHTON	BISHOPS STORTFORD		LONDON COVENT GARDEN
BRISTOL	BRIGHTON WITHDEAN		LONDON MAIDA VALE
CAMBRIDGE	BRISTOL CTE		LONDON MUSEUM
CARDIFF/NEWPORT	CAMBRIDGE TOWN CODE		LONDON COLINDALE SSC
CARLISLE	CAMBRIDGE TRUNK		LONDON EALING SSC
CHELMSFORD	CARDIFF STADIUM		LONDON HARLESDEN
COVENTRY	NEWPORT GWENT DOS RD		LONDON ILFORD SSC
OXFORD	CARLISLE RS	LONDON MAIN NETWORK ELTHAM RS	
CRAWLEY	CHELMSFORD	LONDON WOOLWICH	
CROYDON	COVENTRY	LONDON MILE END	
DONCASTER	EARLSDON	LONDON DOCKLANDS	
EDINBURGH	COWLEY	LONDON NORTH	
GLASGOW/CLYDE VALLEY	OXFORD TE	LONDON POTTERS BAR	
GLOUCESTER	OXFORD TE	LONDON WOODGREEN SSC	
GUILDFORD	CRAWLEY SUSSEX	MANCHESTER	
IPSWICH	LONDON REDHILL	MANCHESTER DIAL HOUSE	
IRVINE	LONDON CROYDON SSC	MILTON KEYNES	
KINGSTON	DONCASTER DON	NEWCASTLE	
LEEDS	EDINBURGH CAPITAL RS	NEWCASTLE UPON TYNE HADRIAN	
LEICESTER	EDINBURGH DALKEITH	NORTHAMPTON	
LIVERPOOL	EDINBURGH MUSSELBURGH	NOTTINGHAM	
LUTON	GLASGOW DIAL HOUSE COMPLEX	PRESTON	
	CLYDE VALLEY	READING	
	GLOUCESTER TE	SALISBURY	
	GUILDFORD	SHEFFIELD	
	IPSWICH	SLOUGH	
	IRVINE BOURTREE TRS AREA 2	SOUTHAMPTON/PORTSMOUTH	
	LONDON KINGSTON SSC	SWINDON	
	LEEDS WESTGATE ATE	WARRINGTON	
	LEICESTER TE	WATFORD	
	LIVERPOOL TK	WOLVERHAMPTON	
	LUTON	YORK	
			COSHAM TE/PORTSMOUTH TRUNK TE
			SOUTHAMPTON TOWN CODE
			SWINDON
			WARRINGTON
			LONDON WATFORD HERTS
			WOLVERHAMPTON
			YORK

Table 6.13 List of aggregation nodes and associated metronodes corresponding to AI markets

FINAL LIST OF ALTERNATIVE INTERFACE "AGGREGATION NODES"	Corresponding metro nodes	FINAL LIST OF ALTERNATIVE INTERFACE "AGGREGATION NODES"	Corresponding metro nodes
ABERDEEN	ABERDEEN CENTRAL	LONDON EAST	KIDBROOKE
BASINGSTOKE	BASINGSTOKE/BOUNTY		UPTON PARK
BELFAST	BELFAST/CITY		WOODFORD
BELFAST	BELFAST/SEYMOUR		HORNCHURCH
BISHOPS STORTFORD	BISHOPS STORTFORD		POTTERS BAR
BIRMINGHAM	BIRMINGHAM CENTRAL		COLINDALE
BIRMINGHAM	BIRMINGHAM MIDLAND		EALING
BIRMINGHAM	ERDINGTON		SOUTHALL
BRIGHTON	BM PERRYFIELDS (BROMSGROVE)		LEICESTER
BRIGHTON	BRIGHTON HOVE		LUTON
BRISTOL	BRISTOL REDCLIFFE	LUTON ATE / TOWER BLOCK	
BRISTOL	BEDMINSTER	LEEDS (3)	
CAMBRIDGE	CAMBRIDGE TRUNKS	BRADFORD (2)	
CAMBRIDGE	CARDIFF	LIVERPOOL	
CARDIFF/NEWPORT	NEWPORT (GWENT)	LIVERPOOL CENTRAL	
CARLISLE	CARLISLE	MAIDSTONE	
CHELMSFORD	CHELMSFORD TOWN	MAIDSTONE	
CHELMSFORD	COVENTRY GREYFRIAR	DIAL HOUSE (MANCHESTER)	
COVENTRY	LEAMINGTON SPA	PENDLETON	
CRAWLEY	CRAWLEY	OLDHAM	
CROYDON	CROYDON	BOLTON	
DARLINGTON/STOCKTON/MIDDLESBOROUGH	DARLINGTON	MANCHESTER	
DERBY	DERBY	MILTON KEYNES	
DERBY	DONCASTER	NOTTINGHAM	
DONCASTER	EDINBURGH DONALDSON	NOTTINGHAM LONGBOW	
EDINBURGH	EXETER CASTLE	NORTHAMPTON	
EXETER	FALKIRK	NEWCASTLE CENTRAL	
FALKIRK	GLASGOW CENTRAL	SOUTH SHIELDS	
FALKIRK	GLASGOW DOUGLAS	OXFORD	
GLASGOW/CLYDE VALLEY	GLOUCESTER	OXFORD CITY	
GLASGOW/CLYDE VALLEY	GUILDFORD/MARTYR	PETERBOROUGH	
GLOUCESTER	IPSWICH TOWN	PETERBOROUGH WENTW	
GLOUCESTER	COLCHESTER TOWN	PRESTON	
GUILDFORD	IRVINE	PRESTON (LANCS)	
IPSWICH	KENDAL	COSHAM	
IPSWICH	KINGSTON	SOUTHAMPTON	
IRVINE	COVENT GARDEN	BRACKNELL	
KENDAL	FARADAY TE (Moorgate)	SALISBURY	
KINGSTON	SOUTHBANK	SALISBURY	
KINGSTON	BT TOWER WESTBLOCK	SHEFFIELD	
LONDON CENTRAL	SOUTH KENSINGTON	SHEFFIELD CUTLER	
LONDON CENTRAL	BERMONDSEY	CHESTERFIELD	
LONDON DOCKLANDS	STEPNEY GREEN	SLOUGH	
		SLough	
		HIGH WYCOMBE	
		STOKE TRINITY/POTT	
		SWINDON	
		ASHTON IN MAKERFIE	
		NORTHWICH	
		WARRINGTON	
		WATFORD	
		WATFORD	
		WOLVERHAMPTON CENT	
		WALSALL CENTRAL	
		YORK	
			MALTON

Section 7

SMP assessment

Introduction

- 7.1 In this Section we set out our conclusions on whether any operator or operators have significant market power (SMP) in the markets we have identified in Section 3 to 6. We first provide a summary of the SMP findings. We then set out our methodology for the SMP assessment, before setting out to assess SMP in each of the relevant markets. We set out our proposals, before reviewing the responses to our consultations and providing Ofcom's response. Finally, having regard for all evidence and all responses, we set out our conclusions in relation to each of the relevant markets.
- 7.2 With respect to the high bandwidth AISBO market in the Hull area, we are consulting further on a revised proposal for SMP assessment. This is because we have subsequently learned that the market shares reported in the January 2008 consultation were incorrect and that there are currently no high bandwidth AISBO circuits sold in the Hull area. This has affected the SMP assessment set out in the January 2008 consultation. We therefore set out our revised analysis for the high bandwidth AISBO market in Hull and invite responses on our revised proposal not to find any operator to have SMP in that market.

Summary of SMP determinations

- 7.3 Except for the markets for very high bandwidth TISBO services, the results of our analysis are unchanged from our proposals set out in the January 2008 consultation. For the markets for very high bandwidth TISBO services, we set out revised proposals in our July 2008 consultation and our conclusions are unchanged from that second consultation.
- 7.4 We conclude at the retail level that:
- BT has SMP in the market for low bandwidth TI retail leased lines (including analogue circuits and digital circuits at bandwidths up to and including 8Mbit/s) in the UK excluding the Hull area (see paragraphs 7.31 to 7.52 below); and
 - no operator has SMP in the market for low bandwidth TI retail leased lines (including analogue circuits and digital circuits at bandwidths up to and including 8Mbit/s) in the Hull area (see paragraphs 7.178 to 7.183 below).
- 7.5 On the wholesale markets, our conclusions are:
- BT has SMP in the low bandwidth TISBO up to and including 8Mbit/s in the UK (excluding the Hull area) (see paragraphs 7.53 to 7.62 below);
 - BT has SMP in the high bandwidth TISBO above 8Mbit/s up to and including 45Mbit/s in the UK (excluding the CELA and the Hull area) (see paragraphs 7.63 to 7.71 below);
 - no operator has SMP in high bandwidth TISBO above 8Mbit/s up to and including 45Mbit/s in the CELA (see paragraphs 7.72 to 7.92 below);

- BT has SMP in the market for very high bandwidth 155 Mbit/s TISBO in the UK (excluding the CELA and the Hull area) (see paragraphs 7.93 to 7.104 below);
- no operator has SMP in the market for very high bandwidth 155 Mbit/s TISBO in the CELA (see paragraphs 7.105 to 7.113 below);
- no operator has SMP in the market for very high bandwidth 622 Mbit/s in the UK (excluding the Hull area) (see paragraphs 7.117 to 7.123 below).
- BT has SMP in the low bandwidth AISBO up to and including 1Gbit/s in the UK (excluding the Hull area) (see paragraphs 7.124 to 7.138 below);
- no operator has SMP in the high bandwidth AISBO over 1Gbit/s in the UK (excluding the Hull area) (see paragraphs 7.139 to 7.162 below); and
- BT has SMP in the wholesale trunk segments market in the UK (see paragraphs 7.163 to 7.177 below).

7.6 Within the Hull area, our conclusions at the wholesale level are:

- KCOM has SMP in the low bandwidth TISBO up to and including 8Mbit/s (see paragraphs 7.184 to 7.190 below);
- KCOM has SMP in the high bandwidth TISBO above 8Mbit/s up to and including 45Mbit/s (see paragraphs 7.191 to 7.196 below);
- KCOM has SMP in the market for very high bandwidth 155 Mbit/s (see paragraphs 7.197 to 7.203 below);
- no operator has SMP in the market for very high bandwidth 622 Mbit/s TISBO (see paragraphs 7.204 to 7.210 below); and
- KCOM has SMP in the low bandwidth AISBO up to and including 1Gbit/s (see paragraphs 7.211 to 7.216 below);

7.7 For each of these markets, below we briefly summarise the reasons for our view as set out in the January 2008 or June 2008 consultations, summarise respondents' views and then set out our response to those views.

7.8 In paragraphs 7.217 to 7.223, we set out the reasons for our revised proposal to find the high bandwidth AISBO over 1Gbit/s market in the Hull area to be effectively competitive. We invite responses to this proposal.

7.9 Before discussing each of the markets, we set out the legal background with regards to SMP determinations, the methodology that Ofcom has followed in the assessment of SMP and the questions we asked in the January 2008 and June 2008 consultations.

Market power determinations

7.10 Section 45 of the Communications Act 2003 (the Act) details the various conditions that may be set under the European regulatory framework. Section 46 details who those conditions may be imposed upon. In relation to SMP services conditions, Section 46(7) provides that they may be imposed on a particular person who is a Communications Provider or a person who makes associated facilities available and

who has been determined to have SMP in a “services market” (i.e. a specific market for electronic communications networks, electronic communications services or associated facilities). Accordingly, having identified the relevant markets, Ofcom is required to analyse each market in order to assess whether any person or persons have SMP as defined in Section 78 of the Act (Article 14 of the Framework Directive).

Definition of SMP

7.11 Under the Directives and Section 78 of the Act, SMP has been defined so that it is equivalent to the competition law concept of dominance. Article 14(2) of the Framework Directive states that:

“An undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers.”

7.12 Further, Article 14(3) of the Framework Directive states that:

“Where an undertaking has significant market power on a specific market, it may also be deemed to have significant market power on a closely related market, where the links between the two markets are such as to allow the market power held in one market to be leveraged into the other market, thereby strengthening the market power of the undertaking”.

7.13 Therefore, in the relevant market, one or more undertakings may be designated as having SMP (single or collective dominance) where any undertaking, or undertakings, enjoys a position of dominance in that market. Also, an undertaking may be designated as having SMP where it could leverage its market power from a closely related market into the relevant market, thereby strengthening its market power in the relevant market.

7.14 In assessing SMP it is important to conduct the analysis under the assumption that no SMP related regulatory intervention currently or potentially exists in that same market. This is because the outcome of the SMP assessment is to test whether or not any regulatory intervention is required. Therefore, assessing SMP in this market requires consideration of a hypothetical market where SMP regulation (or the threat of SMP regulation) does not exist.

The criteria for assessing SMP

7.15 In assessing whether an undertaking has SMP, Ofcom took the utmost account of the SMP Guidelines as it is required to do when considering whether to make a market power determination under Section 79 of the Act, as well as considering the application of the equivalent Oftel guidelines as set out in Section 3 above.

7.16 Specifically, paragraph 19 of the SMP Guidelines states that:

“NRAs will assess whether the competition is effective. A finding that effective competition exists on a relevant market is equivalent to a finding that no operator enjoys a single or joint dominant position on that market.”

7.17 The SMP Guidelines go on to state in paragraph 20 that:

“NRAs will conduct a forward looking structural evaluation of the relevant market, based on existing market conditions. NRAs should determine whether the market is prospectively competitive, and thus whether any lack of effective competition is durable, by taking into account expected or foreseeable market developments over the course of a reasonable period. The actual period used should reflect the specific characteristics of the market and the expected timing for the next review of the relevant market by the NRA. NRAs should take past data into account in their analysis when such data are relevant to the developments in that market in the foreseeable future.”

- 7.18 In paragraph 75 of the SMP Guidelines, the Commission discusses market shares as being an indicator of market power:

“...Market shares are often used as a proxy for market power. Although a high market share alone is not sufficient to establish the possession of significant market power (dominance), it is unlikely that a firm without a significant share of the relevant market would be in a dominant position. Thus, undertakings with market shares of no more than 25% are not likely to enjoy a (single) dominant position on the market concerned. In the Commission's decision making practice, single dominance concerns normally arise in the case of undertakings with market shares of over 40%, although the Commission may in some cases have concerns about dominance even with lower market shares, as dominance may occur without the existence of a large market share. According to established case law, very large market shares — in excess of 50% — are in themselves, save in exceptional circumstances, evidence of the existence of a dominant position...”

- 7.19 However, in paragraph 78 of the SMP Guidelines, the Commission also notes that:

“It is important to stress that the existence of a dominant position cannot be established on the sole basis of large market shares. As mentioned above, the existence of high market shares simply means that the operator concerned might be in a dominant position. Therefore, NRAs should undertake a thorough and overall analysis of the economic characteristics of the relevant market before coming to a conclusion as to the existence of significant market power. In that regard, the following criteria can also be used to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers. These criteria include amongst others:

- *Overall size of the undertaking,*
- *Control of infrastructure not easily duplicated,*
- *Technological advantages or superiority,*
- *Absence of or low countervailing buying power,*
- *Easy or privileged access to capital markets/financial resources,*
- *Product/services diversification (e.g. bundled products or services),*

- *Economies of scale,*
- *Economies of scope,*
- *Vertical integration,*
- *A highly developed distribution and sales network,*
- *Absence of potential competition,*
- *Barriers to expansion.*

A dominant position can derive from a combination of the above criteria, which taken separately may not necessarily be determinative.”

7.20 The European Regulators’ Group (ERG) has issued a working paper on SMP (the ERG SMP Position) that builds upon the SMP Guidelines. In this paper further criteria are explicitly considered:

- excessive pricing;
- ease of market entry;
- cost and barriers to switching;
- evidence of previous anti competitive behaviour;
- active competition on other parameters;
- existence of standards/conventions;
- customers’ ability to access and use information;
- price trends and pricing behaviour; and
- international benchmarking.

Methodology

7.21 When assessing whether SMP exists in a particular market, it is appropriate to take account of any existing or proposed regulation of a service *upstream* of the market that is being considered. It is also appropriate to take into account regulatory obligations that exist independently of an SMP finding in the market under consideration, but which impact on the SMP finding in the markets under consideration. The existence of such regulation needs to be considered to capture the competitive constraints in the market under investigation.

7.22 Notwithstanding this, the mere fact that regulation has been put in place or is proposed in an adjacent market does not automatically mean that this regulation is effective in preventing the exercise of SMP in the market in which it has been imposed. This is particularly the case with respect to regulation that is proposed but which has not yet been put in place. Such regulation needs to be fully implemented and there needs to be compliance with this regulation for a reasonable period of time before it can be assumed that it has dealt with upstream bottlenecks that affect competition in downstream markets.

- 7.23 It is also important to conduct the market analysis against the backdrop of the BT Undertakings provided under Ofcom's Telecommunications Strategic Review (the Undertakings).⁵⁹ The Undertakings were designed to ensure that BT does not discriminate between its own downstream divisions and competitors when offering access services. They require BT to apply Equivalence of Input (Eol) principles to particular access services.
- 7.24 In so far as the Business Connectivity Market Review is concerned, these Undertakings are principally relevant to Wholesale Ethernet services (for example, WES/BES), which are to be provided on an Eol basis. BT is required to provide the following services on an Eol basis:
- WES and BES services; and
 - separate access and backhaul services, to make it easier for other CPs to aggregate leased lines and potentially broadband traffic at BT local exchanges. This includes WES Access, WES Backhaul and WEES products.
- 7.25 With respect to the TISBO market, the Undertakings commit BT to make available new TI Local Access and Backhaul Products to any Communications Provider within a reasonable period of time. Other TISBO services, however, do not have to be provided on an Eol basis.
- 7.26 The assessment of SMP in a particular market should assume that no regulatory intervention (based on an SMP finding) currently or potentially exists *in that same market*. This is because the very purpose of the SMP analysis is to determine whether any regulation is appropriate in that market. Therefore, assessing SMP in this market requires consideration of a hypothetical market where neither regulation nor the threat of regulation exists.
- 7.27 The SMP assessment is based on the most appropriate and current available information. This evidence pertains directly to the retail and wholesale markets under examination. In the case of wholesale markets, it is also based on information in relation to the corresponding retail markets where this can also inform the wholesale analysis. For example, Ofcom has estimated market shares at the wholesale level based on information available at both the retail and wholesale levels.

Review of proposals

- 7.28 In the January 2008 consultation, we asked the following questions in relation to our proposed findings on SMP:

Question 7: Do stakeholders agree with our proposed approach to SMP assessment?

Question 8: Do stakeholders agree with our assessment of SMP in the retail low bandwidth market in the UK excluding the Hull area? In particular, do you agree with our assessment that regulation in this market is still required for the time being?

Question 9: Do stakeholders agree with our assessment of SMP in wholesale TISBO markets in the UK excluding the Hull area?

⁵⁹ The Final statement of BT's Undertakings, published in September 2006, can be found at: http://www.ofcom.org.uk/static/telecoms_review/final_statement.htm

Question 10: Do stakeholders agree with our assessment of SMP in wholesale AISBO markets in the UK excluding the Hull area?

Question 11: Do stakeholders agree with our assessment of SMP in the wholesale trunk segments market?

Question 12: Do stakeholders agree with our assessment of SMP in the retail low bandwidth market in the Hull area?

Question 13: Do stakeholders agree with our assessment of SMP in wholesale TISBO markets in the Hull area?

Question 14: Do stakeholders agree with our assessment of SMP in wholesale AISBO markets in the Hull area?

Question 15: For those markets where we have found no SMP and propose to deregulate, do you agree with Ofcom that the available evidence supports the finding of no SMP?

- 7.29 In the July 2008 consultation, we asked the following questions in relation to our proposed findings on SMP for the very high TISBO markets:

Question 5: Do stakeholders agree with our assessment of SMP in the wholesale very high bandwidth 155 Mbit/s TISBO market in the UK excluding CELA and the Hull area?

Question 6: Do stakeholders agree with our assessment of no SMP in the wholesale very high bandwidth 155 Mbit/s TISBO market in the CELA?

Question 7: Do stakeholders agree with our assessment of no SMP in the wholesale very high bandwidth 622 Mbit/s TISBO market in the UK excluding the Hull area?

Question 8: Do stakeholders agree with our assessment of SMP in the wholesale very high bandwidth 155 Mbit/s TISBO market in the Hull area?

Question 9: Do stakeholders agree with our assessment of no SMP in the wholesale very high bandwidth 622 Mbit/s TISBO market in the Hull Area?

- 7.30 In the following sub Sections, we set out, for each of the markets reviewed in this Section, the proposals set out in our consultations. We then review the responses from stakeholders and provide our response. Then, having regard for all evidence and all responses, we set out our conclusions in relation to the SMP assessment for the markets covered by this review.

Retail market for low bandwidth TI retail leased lines (including analogue circuits and digital circuits at bandwidths up to and including 8Mbit/s) in the UK excluding Hull

January 2008 consultation

- 7.31 In paragraphs 7.38 to 7.155 of the January 2008 consultation we set out why we believed that BT has SMP in the market for retail low bandwidth TI leased lines. Our view was particularly influenced by the following considerations:

- BT's high market shares (80 per cent by volume);
- BT's apparent high profitability, and what appears to be its high pricing⁶⁰;
- BT's control of infrastructure not easily duplicated;
- BT's ability to exploit economies of scale and scope;
- BT's vertical integration;
- a lack of countervailing buyer power;
- the existence of barriers to entry and expansion;
- the absence of potential competition; and
- evidence of previous anti-competitive behaviour by BT.

7.32 We also noted that the impediments to competition largely arise as a result of upstream bottlenecks. Impediments to competition that arise solely at the retail level are much less significant. We considered that this implied that once Ofcom's concerns in regard to BT's position in the upstream market have been fully addressed, it may be possible to de-regulate this market.

Review of responses to the consultation

- 7.33 BT argued that a broader retail market definition should be used, and therefore questioned Ofcom's finding of SMP on the narrower markets it defined. BT argued that a different product market approach would allow a better analysis of geographic markets for low bandwidth retail leased lines, and suggests that the results may show that BT has lower market shares in metropolitan areas. BT also argued that alternative business connectivity services impose competitive constraints on TI leased lines. For example, it argued that VPNs were close substitutes for TI leased lines.
- 7.34 BT also said that its market share in a combined analogue and low bandwidth digital retail leased lines market is skewed by its market share of almost 100 per cent of analogue circuits.
- 7.35 In the context of the three criteria in the European Commission's Recommendation on product and service markets susceptible to ex ante regulation, BT considers that that none of the three criteria are met. BT argues that barriers to entry are low, because wholesale products have been fully available from BT since 2001, and that Ofcom's concerns about replicability have now been addressed. BT also argues that competition law is sufficient to address any concerns.
- 7.36 None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

⁶⁰ Paragraphs 7.52 to 7.79 of the January 2008 consultation set out our analysis of this. We noted that there were limitations with the data, which essentially mean that the profitability analysis does not correspond precisely to the market under consideration. Nevertheless, BT's return on sales and return on value added for leased lines to end-users and to MNOs across all bandwidths generally appear to be very substantially above the levels that competition authorities have usually found should apply in effectively competitive markets where capital intensity is low. For example, for analogue lines, the return on sales was 44 per cent in 2006/07 and the return on value added was 70 per cent.

Ofcom's response to respondents' views

- 7.37 We have considered, and rejected, BT's arguments for a wider retail market in Section 3 above. Even if other services are outside the market, it is still possible for them to exert some limited competitive constraint on the market we are considering. However, we do not believe this is a strong effect. For example, the evidence suggests that users do not switch rapidly from TI leased lines to AI leased lines even in response to quite large price differentials, suggesting that the competitive constraint from AI leased lines is not yet strong (see paragraph 3.60).
- 7.38 In defining the retail product market, we rejected the view that VPNs were in the same market as leased lines. This conclusion applied both to VPNs provided using ADSL and those provided over dedicated tails. Internet-based VPNs provide a much lower quality (and lower price) service and are unlikely to be seen as a substitute for leased lines. Leased line based VPNs can provide quality of service approximating to that of a point-to-point leased line. Although we do not believe they are part of the same market, we have nevertheless calculated what BT's market share would be if VPNs using dedicated tails were included in the same market. BT's market share (by volumes) would decline from 80 per cent to 76 per cent. The inclusion of VPNs therefore makes only a small difference to BT's market share, and would not affect our conclusion that BT has SMP in this market.
- 7.39 BT considers that our volume shares are likely to overstate its true share of the retail market, because it supplies a relatively high share of low value products (i.e. analogue lines) but a lower share of high value shares (i.e. 2 Mbit/s digital leased lines).
- 7.40 We recognised this potential bias in the January 2008 consultation.⁶¹ We sought to address this by using information from our trends annex to examine BT's volume share of various components within the retail leased line market (see Table 17 on page 215 of the January 2008 consultation). This indicated that BT has a 99 per cent share of analogue sales, a 50 per cent share of <2 Mbit/s sales and an 89 per cent share of 2-8 Mbit/s sales. However, because these calculations are based on the data used to calculate our trends analysis and revenue shares, they may be unreliable, as that data set is incomplete.
- 7.41 We have therefore calculated BT's service share for different components of the retail leased line market using the same data source that was used to calculate the 80% market share. This information is complete and highly reliable. The results are shown in Table 7.1 below.

Table 7.1: BT's volume share for individual services within the low bandwidth TI retail leased lines market in the UK (excluding the Hull area) (2006)

	BT Share (%)
Analogue	98
Digital SDH <2 Mbit/s	79
Digital SDH 2 Mbit/s	60
Digital SDH >2 to 8Mbit/s	27
All services in market	80

Source: CP data, Ofcom

⁶¹ See discussion at paragraph 7.50 of the January 2008 consultation.

- 7.42 Table 7.1 indicates that BT's volume share declines for higher bandwidth services. This suggests that if BT's share of the market were expressed by value it would be lower than BT's 80 per cent. However, BT's volume share is still 60 per cent or higher for all services except digital leased lines which exceed 2 Mbit/s. Sales of digital leased lines exceeding 2 Mbit/s only represent around 0.1 per cent of the total volumes in this market. It therefore seems safe to conclude that BT's market share by value is likely to be well in excess of the 50 per cent level that the SMP Guidelines consider normally create a presumption of SMP.⁶²
- 7.43 While regulated wholesale terminating segments have been available since 2001, BT's retail leased lines offerings are not yet replicable⁶³, putting BT's competitors at a potential disadvantage. The persistence of BT's market share, despite evidence suggesting high prices and profitability, suggests that there have been significant barriers to entry for OCPs.
- 7.44 Our view is that that the retail products are still not replicable, for the reasons given in Section 8. Ofcom is now considering launching a separate project to consider in more detail BT's compliance with our Replicability Statement of April 2006, with a view to consulting on this early in 2009.
- 7.45 In terms of the European Commission's three criteria, whilst as set out in paragraph 2.30 we do not believe that passing of the three criteria test constitutes a legal requirement for the undertaking of a market review, we believe that this market cumulatively meets all three criteria. The first and second criteria for considering ex ante regulation relate to high and non-transitory barriers to entry and that the market structure does not tend towards effective competition within the relevant time horizon. We set out below, in the forward looking analysis and conclusion, why we think both these criteria are met.
- 7.46 The third criterion is that the application of competition law alone would not adequately address the market failures. We consider that ex ante retail regulation provides a more efficient means of securing effective competition in the retail market, as against the option of solely relying on the application of ex post competition law.
- 7.47 If the proposed SMP retail obligations were to be removed, there is a risk that BT would exploit its SMP through excessive charges. It is also possible that BT would cease to provide some legacy services in the retail market (such as analogue leased lines) prematurely, as discussed in paragraphs 8.314 to 8.322 of the January 2008 consultation. Absent ex ante regulatory intervention, there is a real risk that BT's conduct would depart substantially and persistently from that which would be desirable. A further consideration in the case of analogue services is that there is no ex ante wholesale remedy for these particular services (i.e. these services are not provided to other Communications Providers on a wholesale basis by BT). While analogue users currently have the ability to switch to retail digital leased line services and so benefit from competition based on wholesale digital remedies, the discussion above makes clear that digital services themselves are not completely effective yet.

⁶² We are not able to present reliable market shares on a revenue basis. Although we sought this information, CPs did not generally provide accurate or sufficiently granular information revenue data that corresponded to the market that we had defined. The data that was available suggested that BT's revenue share ranged from 55 to 60 per cent of the market. However, because the data provided by OCPs was incomplete and was not collected in a consistent manner, there are doubts about the reliance that could be placed on these figures. In particular, these figures are likely to understate BT's true revenue share of the market.

⁶³ We set out in paragraph 8.100 our conclusions in respect of the replicability of BT's retail low bandwidth TI leased lines.

Replicability should therefore also benefit analogue users, who will in any event have migrated to these services by 2012.

- 7.48 Because it is almost certain that such conduct would harm consumers and the competitive process, Ofcom considers that it is more efficient to prohibit this conduct via ex ante regulation rather than to rely on an ex post regime which determines after the fact whether particular conduct is unacceptable. An ex ante approach is likely to create greater specification in advance, and is less costly to interpret and apply. Given its relative ease of administration and application, ex ante regulation will tend to encourage greater compliance. Equally, because of its greater clarity, ex ante regulation will mean that BT is likely to be deterred from engaging in behaviour that is prohibited by regulation.

Forward looking analysis and conclusion

- 7.49 We do not consider that wholesale products are yet replicable, which make it difficult for other CPs to replicate BT's retail offerings. As a result, we consider that the very high barriers to entry that exist in the markets upstream of this retail market continue to translate through to high and non-transitory entry barriers at the retail level.
- 7.50 On a forward looking basis, we need to consider whether the current high barriers to entry will remain if replicable wholesale products are introduced and whether the market will tend towards effective competition within the time horizon of this review.
- 7.51 Impediments to competition that arise solely at the retail level are much less significant than those at the wholesale level. At some point in the future, after Ofcom's concerns with regard to wholesale replicability have been fully addressed, it may be possible to de-regulate this market. However, we do not consider that it can be automatically assumed that the upstream remedies will deal with all the competition concerns in the retail market immediately. The end-user research described in the January 2008 consultation found evidence of some switching costs. We concluded in paragraph 7.140 of the January 2008 consultation that these switching costs are not themselves cause for addition competition concerns at the retail level. However, these switching costs may nevertheless slow down the speed with which adequate remedies at the wholesale level feed through to effective competition at the retail level. That this is the case is supported by the fact that previous wholesale remedies that have existed for several years have not served to reduce BT's market share since the 2003/04 Review, indicating customer inertia. We therefore consider that BT is likely to retain SMP for the duration of this market review. This is consistent with the large majority of responses to the January 2008 consultation who commented on the need for continuing regulation of this market.
- 7.52 For the reasons set out in the January 2008 consultation and above, our view remains that BT has SMP in the market for retail low bandwidth TI leased lines and is likely to retain SMP for the duration of this market review.

Wholesale market for low bandwidth TISBOs up to and including 8Mbit/s in the UK (excluding the Hull area)

January 2008 consultation

- 7.53 In paragraphs 7.187 to 7.239 of the January 2008 consultation we set out why we believed that BT has SMP in the low bandwidth TISBO market. Our view was that the factors which are generally accepted to give rise to entry barriers in telecommunications markets apply very strongly in this market. These are not offset

by the high revenues which can be earned in higher bandwidth markets or in markets which provide greater opportunities for traffic aggregation.

7.54 Our conclusion in the January 2008 consultation was particularly influenced by the following factors:

- the ubiquity of BT's infrastructure and the fact that such infrastructure is not easily duplicated;
- BT's ability to exploit economies of scale and scope; and
- the existence of significant barriers to entry and expansion, including as a result of sunk costs.

7.55 We considered that this is reflected in BT's persistent and very high share in this market (estimated to be 89 per cent in 2006 by volume). No other operator had a market share higher than 2 per cent. BT's market share appears to have increased marginally since the last market review, when it was estimated to have been 84 to 88 per cent.

Review of responses to the consultation

7.56 One respondent agreed with our finding of SMP, but argued that it should be considered as part of a single market for wholesale TISBO across all bandwidths.

7.57 None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

Ofcom's response to respondents' views

7.58 For the reasons set out in Section 5, we continue to believe it is appropriate to segment the market at 8 Mbit/s.

7.59 While not covered in responses, since the January 2008 consultation, we note that BT has issued its 2007/08 regulatory accounts.⁶⁴ These restate BT's reported revenues for 2006/07 for the TISBO markets, significantly reducing revenues. This affects the numbers reported in the earlier consultations. However, for the reasons explained in paragraphs 7.194 to 7.201 of the January 2008 consultation, we did not put much weight on BT's ROCE in the TISBO markets in reaching our view on whether BT has SMP, and hence do not believe that the 2007/08 accounts or the restated 2006/07 accounts affect our conclusions. This also applies to the other wholesale TISBO markets.

Forward looking analysis and conclusion

7.60 Our view remains that BT has SMP in the market up to and including 8 Mbit/s, for the reasons set out in the January 2008 consultation, and summarised above.

7.61 We have assessed whether the SMP that presently characterises the market is likely to be attenuated during the period covered by this review. We have not been able to identify any developments that would serve to reduce the high structural barriers to

64

<http://www.btplc.com/Thegroup/Regulatoryinformation/Financialstatements/2008/Currentcostfinancialstatements2008.pdf>

entry that characterise the market, which would generate sufficient competitive pressures within the next four years to alter the current finding of SMP.

- 7.62 In particular, we consider that the low rate of growth which characterises many of the retail leased line markets that make use of low bandwidth TISBO services is likely to prevent BT's wholesale competitors expanding to a scale where they can operate as efficiently as BT.

Wholesale market for high bandwidth TISBOs above 8Mbit/s up to and including 45Mbit/s in the UK (excluding CELA and the Hull area)

January 2008 consultation

- 7.63 In paragraphs 7.240 to 7.267 of the January 2008 consultation we set out why we believed that BT has SMP in the high bandwidth TISBO market in the UK excluding CELA and the Hull area.
- 7.64 As set out in the January 2008 consultation, our view was that the following factors in particular provide BT with SMP in this market:
- the ubiquity of BT's infrastructure and the fact that such infrastructure is not easily duplicated;
 - BT's ability to exploit economies of scale and scope; and
 - the existence of significant barriers to entry and expansion, including as a result of sunk costs. OCPs have informed us that it is not economical for them to expand beyond their current size in this market. New network build is generally only economical if very short lines are required and if there are no other impediments to competition (e.g. the need to obtain way-leaves).
- 7.65 We considered that this is reflected in BT's persistently high share in this market (45 per cent in 2006).

Review of responses to the consultation

- 7.66 BT put forward arguments for the existence of further TISBO geographic markets. It argued that the high presence of alternative networks in major business centres outside of London should cause us to identify them as competitive areas.
- 7.67 None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

Ofcom's response to respondents' views

- 7.68 In Section 6 we have set out why we do not consider it appropriate to define other geographic markets. In summary, while there is some evidence which could be used to support a conclusion of local geographic markets in other parts of the UK, it is our view that when the available evidence is considered as a whole that a conclusion of local geographic markets in other areas cannot be robustly justified and that the weight of evidence supports the geographic markets we have defined. Our analysis has included assessing the competitive conditions in the postal sectors outside the CELA.

- 7.69 As a result of the minor change in the postal sectors included in the definition of the CELA, the geographic definition of the market excluding the CELA also changes very slightly. We have therefore recalculated the market shares for this market. However, they are unchanged from those reported in paragraph 7.244 and Table 21 of the January 2008 consultation; BT's market share remains at 45 per cent.

Forward looking analysis and conclusion

- 7.70 For the reasons summarised in paragraph 7.64 above, our view remains that BT has SMP in this market.
- 7.71 We have assessed whether the SMP that presently characterises the market is likely to be attenuated during the period covered by this review. There is no evidence that suggests that this market is prospectively competitive, in part because our discussions with the operators that acquire these services indicate that this market is not likely to grow in the future. This is likely to prevent BT's wholesale competitors expanding to a scale where they can operate as efficiently as BT.

Wholesale market for high bandwidth TISBOs above 8Mbit/s up to and including 45Mbit/s in the CELA

January 2008 consultation

- 7.72 As set out in paragraphs 7.268 to 7.283 of the January 2008 consultation, Ofcom's view is that no company has SMP in the high bandwidth TISBO market in the CELA and that, therefore, the market is effectively competitive.
- 7.73 We considered that the small territory covered by this market, combined with the high number of retail customers within the area, enable various CPs to attain scale in this market. The economies of density that can be attained in this market also prevent BT operating at an advantage as a result of any economies of scope that it is able to attain. We considered that Colt's market share of 45 per cent (now revised to 46 per cent) was unlikely to indicate that it has SMP because various other CPs have invested in networks covering the whole area of the CELA. In our response to respondents below, we discuss further why we do not regard Colt as having SMP despite its relatively high market share.
- 7.74 The network reach analysis on which the definition of the CELA is partly based substantiates the fact that there is substantial facilities-based competition in this market. It seems likely that the density of customers within this market provides some assurance to CPs that sunk costs that are incurred in serving any one customer are likely to be recovered in this market, even if they lose the custom of a particular customer.

Review of responses to the consultation

- 7.75 Several respondents argued that the CELA should not be considered a separate market. These respondents argued that high bandwidth TISBO should be considered a national market in which BT has SMP.
- 7.76 One respondent suggested that, even if CELA is considered a separate market, the lack of granularity in Ofcom's research gave them reason to doubt our finding of no SMP. This respondent also argued that the market was clearly a Colt/BT duopoly.

- 7.77 Two respondents believed that the definition of three operators within 250m was insufficient to demonstrate actual sustained competition.
- 7.78 One respondent argued that despite the existence of other providers in the CELA, there are technical, commercial and quality of service barriers to interconnection with OCPs. These factors make it generally preferable to connect with BT, and cast doubt on the finding of no SMP.
- 7.79 BT agreed with our finding of no SMP in the CELA and argued that Ofcom needed to go further and define further geographic markets in other major business centres.

Ofcom's response to respondents' views

- 7.80 We have considered the arguments for different geographic market definitions in Section 6. Our view remains that the CELA is an appropriate geographic market definition. We believe this is supported by the fact that the area in which there are two or more operators in addition to BT closely matches the area in which BT's service share is relatively low.
- 7.81 However, after considering responses, we have revised down the build distance used in our geographic analysis from 250m to 200m. This has the effect of changing the precise boundary of the CELA. As a result of this, we have recalculated the market shares. The revised market shares are given in Table 7.2 below.

Table 7.2: Volume shares for high bandwidth TISBO in the CELA (2006)

	Share (%)
Colt	46
BT	20
Cable and Wireless	14
Verizon	9
Thus	6
Others (no other CP had >3%)	6

Source: CP data, Ofcom

- 7.82 These market shares are almost the same as those reported in the January 2008 consultation (see paragraph 7.271 and Table 23 of that consultation). When rounded to the nearest percent, the only operator whose market share changes is Colt, whose market share increases by 1 per cent, from 45 per cent to 46 per cent. This very minor change does not affect the analysis set out in the January 2008 consultation.
- 7.83 Colt's market share is above the threshold of 40 per cent that the SMP Guidelines state normally raises concerns about dominance. Nevertheless, for the reasons given below, we do not believe that Colt has SMP in the CELA.
- 7.84 As set out in paragraph 7.11, an undertaking has SMP if it enjoys a position of economic strength that affords it the "power to behave to an appreciable extent independently of competitors, customers and ultimately consumers". A key test of whether Colt has SMP is whether it would be able to profitably sustain an increase in price above the competitive level within the CELA. We consider that Colt would be unlikely to be able to do this.
- 7.85 If Colt were to increase prices above the competitive level, then a large share of customers would be likely to switch to another provider. The CELA has been

constructed such that there are at least three network operators within 200m of large business sites within each postal sector. Our end-user research indicates that even smaller end-users review their business connectivity services regularly. This suggests that if Colt were to try to increase prices above a competitive level, then customers would want to switch to a competitor and that there would be competitors within an economic build distance who would be able to offer lower prices. Colt would find the original price rise to be unprofitable and could not be regarded as being able to act independently of competitors and customers.

- 7.86 The situation in the CELA is in sharp contrast to the high bandwidth TISBO market in the UK excluding CELA and the Hull area. Although BT has a fractionally lower market share (at 45 per cent) in that market than Colt has in the CELA (at 46 per cent), the crucial difference is the ability of the largest operator's current customers to switch to an alternative provider. Competitive conditions within the CELA are such that Colt's customers are able to switch to one of two or more other operators throughout the area. By contrast, outside the CELA, competition is more variable. This variability raises the possibility of defining other geographically distinct markets outside the CELA and we have considered this question in Section 6 (see paragraphs 6.12 to 6.16 above). We have concluded that, on the evidence, there is currently a single market outside the CELA. Nonetheless, in some areas which are relatively easily supplied by another operator, BT has been gradually losing market share over time. However many of BT's customers do not have any realistic alternative to taking services from BT. This means that many of BT's customers would be unable to switch if BT were to price above a competitive level. Outside the CELA, BT can therefore act independently of competitors and customers to an appreciable extent.
- 7.87 The reason that competition has developed in the CELA is mainly that it has much higher customer density. This makes entry easier in that sunk costs that are incurred in serving any one customer are likely to be recovered in this market, even if the CP loses the custom of that particular customer. For example, if one end-user within a building were to cease acquiring very high bandwidth services before the initial investment in infrastructure had paid off, a CP could attempt to win the custom of other end-users within the building. The high customer density in the CELA, combined with the number of competing networks within an economic build distance of these customers, also means that neither Colt nor any other operator is likely to have a significant scale advantage over other operators.
- 7.88 That entry is easier in the CELA is illustrated by Colt's own position. When compared to BT, Colt itself can be regarded as a new entrant, having built the first part of its network in London in 1993. Colt's market share has not therefore been systematically high for a long period of time. Colt's position has been built up by competing against BT and others, and is not the result of it having significant advantages in terms of infrastructure that is not easily duplicated.
- 7.89 While its market share has fallen to 20 per cent, BT retains its ubiquitous network and hence its ability to supply all of Colt's customers in the CELA at a competitive price. After Colt and BT, Cable and Wireless is the most important operator in the CELA in this market. Following Cable and Wireless's recent purchase of Thus, the combined market share will be 20 per cent, the same as BT's market share. Given that other operators already have networks throughout the CELA, it is unlikely that Colt, or any other operator, will have a significant cost advantage through having control of infrastructure.

- 7.90 Barriers to interconnection were discussed in paragraphs 6.57 to 6.64 of the January 2008 consultation. Ofcom continues to believe, on the basis of the analysis conducted at that time, that technical and commercial barriers to interconnection between OCPs are limited. On quality of service barriers, while we have been consistently told by operators that this is an issue, the end-user research found that end users were less concerned about using networks which utilised wholesale inputs from multiple network operators and would tend to link premises using the lowest cost provider at the time the connection was raised. This, together with the data from OCPs which showed that there exists significant interconnection between OCPs, suggests that barriers to interconnection are not insurmountable. We therefore do not accept that this gives BT a significant advantage. This is also consistent with the fact that it does not have the largest market share in the provision of these services in the CELA.
- 7.91 If in the future circumstances were to change such that Colt was able to act independently of competitors and customers to an appreciable extent, then it would have SMP. However, given that the CELA has been constructed such that there are at least three network operators within each postal sector, we consider this to be unlikely. For an operator to have SMP in this situation, we would need to have evidence that the operator had particular advantages over its competitors that inhibited customers switching operators in response to a price above the competitive level. A high market share on its own would be a poor indicator of market power in such a market.

Conclusion

- 7.92 For the reasons set out in paragraphs 7.268 to 7.283 of the January 2008 consultation (summarised in paragraph 7.73 above) and the additional reasons set out above, Ofcom's view is that no company has SMP in the high bandwidth TISBO market in the CELA and that, therefore, the market is effectively competitive.

Wholesale very high bandwidth 155 Mbit/s TISBO market in the UK excluding CELA and the Hull area

July 2008 consultation

- 7.93 Paragraphs 5.22 to 5.52 of the July 2008 consultation set out Ofcom's view that BT has SMP in the wholesale very high bandwidth 155 Mbit/s TISBO market in the UK excluding CELA and the Hull area.
- 7.94 This conclusion was based particularly on the following factors:
- BT's high market share (56 per cent by volume);
 - the ubiquity of BT's infrastructure and the fact that such infrastructure is not easily duplicated;
 - BT's ability to exploit economies of scale and scope; and
 - the existence of significant barriers to entry and expansion, including as a result of sunk costs. New network build is generally only economical if short lines are required and if there are no other impediments to competition.
- 7.95 Our view that BT has SMP in this market has been informed by responses to the January 2008 consultation. OCPs and MNOs generally said that 155 Mbit/s TISBOs

are only supplied in competitive conditions in some metropolitan areas, and that in the rest of the UK there is no realistic alternative to BT.

- 7.96 Some respondents to the January 2008 consultation provided confidential evidence to support this view. This evidence included a description of the extent to which one company had tried to encourage companies other than BT to supply it with 155 Mbit/s TISBO services outside of major metropolitan areas (including offering longer term contracts), and the fact that their efforts were largely unsuccessful. Another example consisted of a case study of a major infrastructure bid, and the limited extent to which the OCP was able to justify expanding its own network, or finding an alternative to BT, for 155 Mbit/s TISBO services.

Review of responses to the consultation

- 7.97 BT was concerned about the figures used to calculate its share of the very high bandwidth TISBO market. In particular, BT was concerned that the analysis did not fully capture the ability of MNOs to self-provide network connectivity using point to point radio links, and the competitive constraint this exerts on 155 Mbit/s TISBOs. BT wanted to see a breakdown of demand to assess whether it captured all demand, including MNO self supply.
- 7.98 Most other responses agreed with Ofcom's finding of SMP. However, other respondents also had concerns about the market share data used, in particular about the allocation of products between markets and a concern about whether BT's own internal demand had been fully included.

Ofcom's response to respondents' views

- 7.99 We concluded in Section 5 that MNOs' self supply of 155 Mbit/s radio links were in the same market to the extent that the links are used for RBS backhaul (that is, links that connects a mobile communications provider's base-station to the mobile communications provider's mobile switching centre). Our understanding based on information from MNOs provided in response to the July 2008 consultation is that the 155 Mbit/s links that MNOs self-supply are not in general used for backhaul. On this basis, BT's market share of 56 per cent presented in Table 5.1 of the July 2008 consultation was calculated excluding all MNO self-supply.
- 7.100 However, even if we had included all MNO self-supplied 155 Mbit/s radio links, BT's market share would be around 46 per cent. This is shown in Table 7.3 below.

Table 7.3: Volume shares for very high bandwidth 155 Mbit/s TISBO market in the UK excluding CELA and the Hull area

	Excluding all MNO self supplied radio links	Including all MNO self supplied radio links ⁶⁵
BT	56%	46%
Cable and Wireless	31%	25%
Thus	4%	4%
MNO self-supply	n/a	19%
Others	9%	7%

Source: CP data, Ofcom

- 7.101 46 per cent might be thought of as a lower bound of BT's market share, because some of the self-supplied radio links included may be used for purposes other than RBS backhaul. Even at 46 per cent, BT's market share would be above the threshold of 40 per cent that the SMP Guidelines state normally raise concerns about dominance, whilst being below the 50 per cent level that the SMP Guidelines consider normally create a presumption of SMP.
- 7.102 There are other reasons for thinking that the threat of MNOs self supplying 155 Mbit/s radio links is unlikely to act as a significant constraint on BT's pricing of equivalent fixed line circuits. Using radio or microwave backhaul links is infeasible in many instances, due to, for example, line of sight problems. It is likely that wireless backhaul links are already used by MNOs where this is feasible, suggesting that there is limited scope for the threat of such circuits to constrain BT.

Forward looking analysis and conclusion

- 7.103 BT's market share is between 46 and 56 per cent, and is probably at the upper end of this range. Given this market share and for the other reasons set out in the July 2008 consultation (summarised in paragraph 7.94 above) and the additional reasons given above, our view remains that BT has SMP in this market.
- 7.104 We do not consider that BT's SMP that currently characterises this market is likely to reduce during the period covered by this review. The underlying factors that give BT SMP currently are unlikely to change during the period covered by this review.

Wholesale very high bandwidth 155 Mbit/s TISBO market in the CELA

July 2008 consultation

- 7.105 Paragraphs 5.53 to 5.75 of the July 2008 consultation set out Ofcom's view that no operator has SMP in the wholesale very high bandwidth 155 Mbit/s TISBO market in the CELA and that the market is therefore effectively competitive.
- 7.106 From the information available to Ofcom, Colt rather than BT has the largest market share, in terms of volumes. Colt has a market share of 55 per cent. The SMP Guidelines consider that a market share of greater than 50 per cent is itself evidence of SMP except in exceptional circumstances⁶⁶ and that a market share of greater than 50 per cent normally creates a presumption of SMP if this market share has

⁶⁵ In this calculation, we have also included all MNO self-supplied 155 Mbit/s *fibres* links which according to our information are used for RBS backhaul.

⁶⁶ See paragraph 75 of the SMP Guidelines

remained constant over time. However, we believe that exceptional circumstances do exist in the CELA and Colt does not have SMP in this market. We expand on these reasons in paragraphs 7.113 to 7.116 below.

- 7.107 When compared to BT, Colt can be regarded as a new entrant, having built the first part of its network in London in 1993. Colt's market share has not therefore been systematically high for a long period of time. Colt's position has been built up by competing against BT and others, and is not the result of it having significant advantages in terms of infrastructure that is not easily duplicated. The fact that Colt has entered this market and gained a relatively high market share illustrates the fact that sunk costs and economies of scale and scope are not overwhelming in this market, and that the customer density in the London area makes entry easier than in the rest of the UK.
- 7.108 The reason that high customer density makes entry easier is that sunk costs that are incurred in serving any one customer are likely to be recovered in this market, even if the CP loses the custom of that particular customer. For example, if one end-user within a building were to cease acquiring very high bandwidth services before the initial investment in infrastructure had paid off, a CP could attempt to win the custom of other end-users within the building. The high customer density in the CELA, combined with the number of competing networks within an economic build distance of these customers, also means that neither Colt nor any other operator is likely to have a significant scale advantage over other operators.
- 7.109 As with the corresponding high bandwidth market, the small territory covered by the CELA, combined with the high number of retail customers within the area, enable OCPs to attain scale more quickly in this market compared to other markets. The economies of density that can be attained in this market prevent any one company from operating at an advantage as a result of any economies of scale or scope that it is able to attain compared to the other companies with extensive networks within the CELA. This is consistent with many of the responses to the January 2008 consultation that expressed views on this.

Review of responses to the consultation

- 7.110 A number of respondents expressed concern about the way the CELA was constructed, for example about the dig distance used. Another argued that while there is more competitive pressure in the CELA, it is not yet effectively competitive, though the implication was that it was BT that had SMP rather than Colt.
- 7.111 No respondent explicitly argued that Colt had SMP in this market.

Ofcom's response to respondents' views

- 7.112 Concerns about the method used to define the CELA relate to market definition rather than SMP and have been discussed in Section 6. Given this market definition, Ofcom does not accept that the market is not yet effectively competitive, for the reasons given above.

Conclusion

- 7.113 The SMP Guidelines consider that a market share of greater than 50 per cent is itself evidence of SMP except in exceptional circumstances. The note in the SMP Guidelines clarifying this states that "large market shares can become accurate measurements only on the assumption that competitors are unable to expand their

output by sufficient volume to meet the shifting demand resulting from a rival's price increase⁶⁷. As explained further below, we consider that Colt's competitors in the CELA are able to expand their output sufficiently to constrain a price increase by Colt. For the reasons give below, we consider that exceptional circumstances do exist in the CELA.

- 7.114 The CELA has been constructed such that there are at least three network operators within 200m of large business sites within each postal sector. In addition to Colt's network, there are therefore at least two other networks within an economic build distance of customers in the CELA. As these competing networks are already in place, they would be able to serve Colt's customers relatively easily. Our end-user research indicates that even smaller end-users review their business connectivity services regularly. This suggests that if Colt were to try to increases prices above a competitive level, then customers would want to switch to a competitor and that there are competitors within an economic build distance who would be able to offer lower prices. Colt would find the original price rise to be unprofitable and could not be regarded as being able to act independently of competitors and customers.
- 7.115 We have set out this argument in slightly more detail in paragraphs 7.84 to 7.91 above in relation to the wholesale high bandwidth TISBO market in the CELA. We consider that the same reasoning also applies to our finding of no SMP for the wholesale very high bandwidth 155 Mbit/s TISBO market in the CELA, in which Colt has an even higher market share.
- 7.116 Ofcom's conclusion that no operator has SMP for the wholesale very high bandwidth 155 Mbit/s TISBO market in the CELA is therefore unchanged.

Wholesale very high bandwidth 622 Mbit/s TISBO market in the UK excluding the Hull area

July 2008 consultation

- 7.117 Paragraphs 5.76 to 5.97 of the July 2008 consultation set out Ofcom's view that no company has SMP in the wholesale very high bandwidth 622 Mbit/s TISBO market in the UK and that, therefore, the market is effectively competitive. The reasons for this view are summarised below.
- 7.118 BT, which has the most extensive network and greatest scope to take advantage of any economies of scope, only has a market share of 7 per cent. There are three operators with larger market shares. The market is not particularly concentrated.
- 7.119 Compared to lower bandwidth markets, we considered that barriers to entry and expansion appeared to be much lower because of the high revenues that can be earned in this market. The very large amount of traffic that can be carried over a single very high 622 Mbit/s bandwidth TISBO circuit also makes it easier to obtain scale in this market.
- 7.120 Our proposals in the July 2008 consultation were consistent with most responses to the January 2008 consultation that expressed views on this. These generally suggested that this market was competitive.

⁶⁷ See note 78 in the SMP Guidelines.

Review of responses to the consultation

7.121 Only a small number of respondents commented on the SMP assessment in the 622 Mbit/s market. There was a concern that competitive conditions varied across the country and BT was likely to have SMP in some areas.

Ofcom's response to respondents' views

7.122 We recognise that competition conditions in the wholesale very high bandwidth 622 Mbit/s TISBO market may vary across the UK. However, we expect that any such variation would be limited. This is because, as discussed in Section 6, there are currently only a very limited number of postal sectors in which 622 Mbit/s circuits are provided. We expect that over the period of this market review that demand for 622 Mbit/s circuits is likely to continue to be concentrated in major urban or business areas. Such concentration reduces barriers to entry and expansion which in turn we expect will allow other CPs to compete effectively with BT given the high revenues that can be earned in this market.

Conclusion

7.123 Ofcom's view remains that this market is effectively competitive, for the reasons given in the July 2008 consultation and summarised above. While we recognise that competitive conditions may vary across the UK, we consider it likely that demand for 622 Mbit/s circuits will be concentrated in areas where other CPs can compete with BT. Given BT's current low market share, we consider it unlikely that the position will change materially within the timeframe of this review.

Wholesale market for low bandwidth AISBOs up to and including 1Gbit/s in the UK excluding the Hull area

January 2008 consultation

7.124 In paragraphs 7.310 to 7.334 of the January 2008 consultation, we set out why we considered that BT has SMP in this market. Our broad reasoning was similar to that which applied in the low bandwidth TISBO market. Our conclusion was based on an analysis of primarily the following SMP criteria:

- BT's high market share (73 per cent by volume in 2006);
- the high profits that BT appears to earn in respect of the relevant services;
- the advantages enjoyed by BT due to the ubiquity of its infrastructure and the existence of barriers to entry and expansion, notably those provided by sunk costs; and
- the greater economies of scale and scope enjoyed by BT.

7.125 We considered that the low opportunities for aggregating traffic in this part of the network, together with the correspondingly low expected retail revenues earned in relation to low bandwidth AISBO services meant that operators are often reluctant to extend their network footprint in order to serve this market.

7.126 Further, we considered that the fact that BT's share of the market has fallen only marginally since the last market review indicates that BT's SMP is likely to persist in this market. In 2004, BT's market share of the overall AISBO market was 75 per cent

(which encompassed all bandwidths), and its share of AISBO services below 100 Mbit/s was estimated to be between 75 per cent and 80 per cent. This is compared to its market share of 73 per cent in 2006 for the market defined as terms of AISBO up to and including 1 Gbit/s.

Review of responses to the consultation

- 7.127 BT did not consider that our finding that it held SMP in the low bandwidth AISBO market was correct in certain metropolitan areas.
- 7.128 BT considered that our supply-side analysis had failed to take into account several factors, including:
- the differences in supply conditions between fibre and copper access;
 - the emergence of strong, vertically integrated competitors since the last market review; and
 - the fact that in a number of cases, BT faces the same cost as its fibre competitors due to the requirement for additional building work to deliver dedicated point-to-point services.
- 7.129 BT also argued that Ofcom had underestimated the future competitiveness of the AISBO market as an increasing number of technologies are able to substitute AISBO services.
- 7.130 No other respondents disagreed with Ofcom's finding of SMP in this market.
- 7.131 In response to the July 2008 consultation, Cable and Wireless raised the issue of whether BT's own use of backhaul is included in market share figures.

Ofcom's response to respondents' views

- 7.132 We do not believe that a separate market for AISBOs in the CELA (or other metropolitan areas) can be identified. Variations in competitive conditions are much less significant than for TISBOs where for certain product markets the CELA has been defined as a distinct geographic market (see Section 6). Nevertheless, we have estimated that BT's share of the low bandwidth AISBO market in the CELA is approximately 57 per cent. When combined with the other advantages BT enjoys relative to OCPs, such as economies of scope from access to duct and a more extensive existing fibre network, this strongly suggests it would have SMP in a separate CELA market and that in practice our findings would be unchanged even if we had formally considered the CELA separately.
- 7.133 Ofcom accepts that there are differences in the supply conditions of fibre and copper access. In particular, while BT's copper access network is ubiquitous, BT's fibre network has been built in response to specific customer demand. However, BT is still likely to have significant advantages over OCPs in terms of benefiting from its much more extensive duct and fibre network. This is a particularly important advantage for the low bandwidth AISBO market, where the costs of duct and fibre form a high proportion of the total cost. We therefore still believe that BT is likely to have significant advantages from greater economies of scale and scope compared to OCPs. Also, because these are sunk costs, they also contribute to the significant barriers to entry and expansion.

- 7.134 The consolidation of competitors since the last market review that BT refers to in its response has not affected BT's market share significantly, as that has only declined marginally (as described in paragraph 7.126 above). This suggests that this consolidation of competitors has not had a dramatic effect on BT's market power.
- 7.135 Since the earlier consultations, BT has issued its 2007/08 regulatory accounts. These restate BT's reported revenues for 2006/07 for the AISBO markets, significantly raising them. For all bandwidths, BT's ROCE on AISBOs was 31 per cent in 2007/08. The restated ROCE for 2006/07 was 27 per cent, compared to the figure reported in the January 2008 consultation of 20 per cent. The large majority of the revenue relates to bandwidths up to and including 1Gbit/s, suggesting that the ROCE would be similar for this market in isolation. This high profitability strengthens the case that BT has SMP.
- 7.136 The issue Cable and Wireless raised about the inclusion of BT's own backhaul is relevant to the low bandwidth AISBO market, given that BT does not use high bandwidth AISBO for its own backhaul. Where BT sells wholesale broadband access (WBA) products (such as IPStream), it does not make use of unbundled local loops to supply WBA and therefore does not make explicit use of a BES input. We therefore understand that the data BT has provided for low bandwidth AISBOs will not include any BES figures for exchanges. If in the future BT were to use BES for wholesale broadband access products, this would increase BT's market share, which would reinforce our current decision that BT has SMP.

Forward looking analysis and conclusion

- 7.137 Our conclusion remains that BT has SMP in the low bandwidth AISBOs market outside the Hull area. Our conclusion is based primarily on:
- BT's high market share (73 per cent by volume in 2006) and that it has fallen only marginally since the last market review;
 - the high profits that BT appears to earn in respect of the relevant services (which are now higher than as set out in the January 2008 consultation);
 - the advantages enjoyed by BT due to its much more extensive duct network and its existing fibre network and the existence of barriers to entry and expansion, notably those provided by sunk costs; and
 - the greater economies of scale and scope enjoyed by BT.
- 7.138 We have considered whether the SMP that presently characterises the market is likely to be attenuated during the period covered by this review. We consider this to be unlikely. In particular, the fact that BT's market share has only fallen marginally since the last review suggests it is unlikely that there will be a rapid decrease in BT's market share over the next few years. The advantages that BT enjoys are based on physical infrastructures which are unlikely to change quickly.

Wholesale market for high bandwidth AISBOs in the UK excluding the Hull area

January 2008 consultation

- 7.139 In paragraphs 7.335 to 7.350 of the January 2008 consultation, Ofcom proposed that BT did not have SMP in the wholesale market for high bandwidth AISBOs in the UK excluding Hull.
- 7.140 Ofcom considered that the very high revenues that can be earned in the downstream retail markets mean that OCPs are generally willing to sink the high fixed costs that are necessary to operate in this market. Further, the very large amount of traffic that can be carried over a single high bandwidth AISBO service enables OCPs to attain scale in this market and prevent other factors such as economies of scope from placing BT at a cost advantage. We considered that these conclusions are reflected in the relatively unconcentrated nature of the market.

Review of responses to the consultation

- 7.141 As described in Section 5, several respondents disagreed with our conclusion that there is a break in the market for circuits above 1Gbit/s.
- 7.142 Some respondents argued that, even if AISBO circuits over 1 Gbit/s constitute a separate market, BT has or will soon have SMP in that market. Respondents gave various reasons in support of this argument including:
- the large fall in BT's market share since the last review is suspicious and Ofcom's market share analysis may not be robust due to the small number of lines counted;
 - although BT does currently have a low market share, it has a significant cost advantage over its competitors due to access to duct and supply-side synergies with the low bandwidth AISBO market, as fibre represents around 60% of the costs base of circuits above 1 Gbit/s;
 - Ofcom is mistaken to assert that there are low entry barriers due to the high price/returns, because BT has a low cost base and can therefore reduce its price in response to entry;
 - due to the small size of the current market, it may not necessarily be a good indicator of competitive conditions in the future;
 - the development of the wholesale Ethernet market means that SMP in the above 1Gbit/s sector is likely to be entrenched for some time to come; and
 - currently, the market is small and competitive, based largely in London. However, the market will expand rapidly as bandwidth requirements for broadband backhaul grow and as broadband and leased line traffic is aggregated for transmission over converged 21CN infrastructure. Therefore BT's underlying fibre infrastructure will be a strong advantage and BT's market share will increase.
- 7.143 BT agreed with Ofcom's view that it did not have SMP.
- 7.144 Following publication of the January 2008 consultation, we were informed by two CPs that some of the data they had supplied to us was incorrect. We have therefore

worked with them to ensure that the information on which we base our decision is revised and accurate.

Ofcom's response to respondents' views

Market share

7.145 As a result of the responses, we have reviewed and updated our estimates of market share. This was partly to reflect the fact that we had been misinformed, with some circuits being allocated to this market when they actually fell outside it. It was also to gather additional information to review the argument that the market was not well developed and that BT's market share would grow as the market developed. The table below shows the market share estimates, by volume.

Table 7.4: Volume estimates for high bandwidth AISBO in the UK (excluding the Hull area)

	December 2006		April 2008 ⁶⁸
	Original market shares reported in Jan 2008 consultation	Revised market shares	
BT	26%	49%	38% to 40%
New entrants since Dec 06	0%	0%	17% to 18%
Others	74%	51%	42% to 45%

Source: Ofcom analysis on CPs data, June 2008

7.146 For December 2006, BT's market share is now estimated to have been 49 per cent rather than the originally estimate of 26 per cent.

7.147 We have asked the largest CPs present in the market at that time (including BT) for an update on their sales in this market as of April 2008. We worked with these CPs to ensure that there was a common understanding of the market boundaries and which circuits should be included in these estimates. We also gathered data from some other CPs who we believed were likely to have entered the market.

7.148 BT's market share at April 2008 is estimated to be around 38 to 40 per cent. We believe that this estimate may overstate BT's market share.⁶⁹ BT market share is therefore estimated to be just below the threshold of 40 per cent that the SMP Guidelines state normally raises concerns about dominance, though we recognise that market share is only one indicator and SMP can occur at lower market shares.

7.149 The above table also indicates recent trends in market share. Given the revisions to the December 2006 market shares, BT's market share has fallen between December 2006 and April 2008. This is consistent with a longer term downward trend in BT's volume share, as BT's market share was estimated to have been in excess of 70 per cent at the time of the last market review, albeit on very small volumes.

⁶⁸ The mid point of these ranges sum to 100 per cent.

⁶⁹ The market shares estimates for April 2008 are not definitive. We did not approach the smallest CPs present in the market as at December 2006 for an update on their sales as at April 2008, and we may not have included all CPs who may have entered the market. This may mean that BT's market share estimate is biased upwards and that its actual market share may be lower. Also, for the April 2008 estimates we were not able to replicate the count of wholesale ends, on which the December 2006 wholesale shares are based. The April 2008 estimates therefore represent *wholesale circuits* rather than *wholesale ends*.

7.150 The table shows that there has been considerable new entry since December 2006. Companies which were not present in the market in December 2006 accounted for 17 to 18 per cent of the market by April 2008.

BT's control of infrastructure not easily duplicated

- 7.151 It has been argued that Ofcom underestimated the extent of supply side synergies between high and low bandwidth AISBO markets. In particular, both high and low bandwidth products use the same underlying fibre infrastructure, and BT has a much more extensive fibre network than any other company. Such infrastructure forms a large part of total costs. BT could therefore more readily offer high bandwidth products compared to other companies.
- 7.152 We recognise that BT benefits from already having in place some of the infrastructure necessary to compete in this market. However, as we said in the January 2008 consultation, at this stage AISBO services are still generally provided on a point-to-point basis, which implies that some of the economies of density that BT attains in respect of its SDH/PDH infrastructure are less likely to apply to this market.
- 7.153 Moreover, the higher revenues that can be earned in the downstream markets mean that CPs will be more willing to sink the high fixed costs that are necessary to operate in this market. This means that BT's control of infrastructure is less likely to mean that BT has SMP in this market.
- 7.154 We believe this view is supported by the evidence of continued market entry, and the fact that the recent new entrants have been able to obtain nearly a fifth of the market in a relatively short space of time. This suggests that other CPs are able to compete with BT in this market.
- 7.155 Demand for high bandwidth AISBO services will increase in the future. A number of OCPs have provided us with their own demand forecasts, which show their demand increasing significantly over the next few years. It has been argued that this will increase BT's market power. However, growth in demand is not in itself likely to lead to increasing market power for BT. Indeed, in general, growing demand is likely to make it easier for new firms to enter and compete. This is consistent with recent trends in market share: BT's market share has fallen over the last 18 months during a period when volumes have been growing.
- 7.156 While we do not regard future growth in demand as necessarily meaning that BT will have increasing market power, we do recognise that this could be the case depending on the location of the future demand. Some respondents suggested that our assessment of competitive conditions might differ if we looked at this on a forward-looking basis. In particular, once the demand for circuits above 1 Gbit/s grows in areas outside London, where alternative infrastructures are less well developed, these operators argue that competitive conditions in the high bandwidth AISBO market will come to resemble those in the low bandwidth market. Our conclusion is that this is unlikely to happen, for the following reasons:
- applications that require such high bandwidths tend to be concentrated in urban areas where large users such as financial institutions and government offices are located;
 - demand for LLU backhaul in dense traffic areas is currently being met with circuits of speeds up to 1 Gbit/s, with investments for the forthcoming years now

concentrating on 1 Gbit/s circuits. There does not seem to be a significant demand for LLU backhaul at higher bandwidths; and

- demand for broadband in other areas, where the lower ability to exploit economies of scale makes LLU generally less attractive, is currently being met largely by use of bitstream access. This is unlikely to change in the near future.

7.157 In 2006, half of the total AISBO ends were in greater London and half were in the rest of the UK. BT's service share in greater London was higher than for the rest of the UK. This is also consistent with the view that BT's current market share is not misleadingly low because demand is heavily concentrated in London. (We do not have a geographic breakdown for the April 2008 market share figures).

7.158 In the light of this, we think that any advantages which BT may derive from its network are unlikely to be so large as to give BT SMP within the timeframe of this market review. New demand is likely to be concentrated in areas where it is economic for OCPs to compete, given the high value nature of these services.

Ease of market entry

7.159 In the January 2008 consultation, we suggested that the relatively high expected revenues that can be earned in this market offered an assurance to CPs that sunk costs can be recovered, thereby making the market more attractive to potential entrants.

7.160 We believe that entry since December 2006 by new providers illustrates this. Providers who have only entered the market within the last 18 months already having nearly a fifth of the market, by volume. Also, another CP has told Ofcom that it is planning to enter this market shortly.

Conclusion

7.161 We have reviewed the finding of SMP in the light of both the responses and the revised market share estimates. Our conclusion is unchanged: we do not believe that BT, or any other operator, has SMP in this market. The arguments for this are set out in the January 2008 consultation, supplemented by the revised market share and further analysis above. Our conclusion is based particularly on the following:

- while still relatively high at around 38 to 40 per cent, BT's market share is continuing to fall and we do not believe there is evidence to suggest this trend will reverse in the near future;
- there has been significant entry in the market in the recent past, and we are aware of likely future entry;
- the very high revenues that can be earned in the downstream market mean that CPs are generally willing to sink the high fixed costs that are necessary to operate in this market;
- BT's advantages in terms of economies of scale and scope are not so large in this market: the very large amount of traffic that can be carried over a single high bandwidth AISBO service enables CPs to attain scale in this market and prevent other factors such as economies of scope from placing BT at a significant cost advantage.

7.162 We recognise that the high bandwidth AISBO market is continuing to develop and that demand is likely to increase over the period of the market review. However, we do not have any evidence which suggests that this demand is likely to develop to any significant degree in geographic areas outside of areas with a concentration of large business sites. On this basis, the available evidence suggests that there is no operator which can be found to be in a position of SMP in this market for the reasons outline above. That said, we intend to keep developments in this market under review to ensure that these conclusions remain appropriate over the period of this market review.

Wholesale trunk segments market in the UK

January 2008 consultation

7.163 Paragraphs 7.351 to 7.461 of the January 2008 consultation set out the reasons for Ofcom's proposal that BT has SMP in the wholesale trunk segments market in the UK. Our view was based on:

- BT's high market share estimated to be in the range of 58 per cent to 86 per cent (which appears to reflect not only its own retail operations but also a high share of sales to other CPs);
- BT's apparent high profitability in this market (discussed further below);
- the ubiquity of BT's infrastructure and the number of routes subject to little or no competition;
- economies of scale; and
- barriers which impede other CPs entering or expanding in this market.

Review of responses to the consultation

7.164 BT disagreed with our market definition analysis and argued that a different assessment of competitive conditions should be used for the geographic market definition. BT argued that this would justify putting some routes into a separate geographic market in which BT would not have SMP.

7.165 BT argued that the focus on the ROCE in the trunk segments market was misleading. It argued that other providers purchase either end-to-end circuits consisting of trunk and termination, or termination alone. They do not purchase trunk alone. BT said that its returns from termination were low and so consequently its return from complete circuits sold to other CPs was around 15 to 16 per cent.

7.166 In the context of the European Commission's three criteria test, BT did not believe that the first criterion, relating to the existence of high and non-transitory entry barriers, is met for this market. BT argued that there is already extensive parallel infrastructure. BT set out evidence of trunk infrastructure of other CPs.

7.167 None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

Ofcom's response to respondents' views

- 7.168 We have discussed BT's criticisms of our approach to geographic markets in Section 6, together with a consideration of BT's suggested approach. We concluded in Section 6 that our view on a national market as proposed in the January 2008 consultation is appropriate.
- 7.169 The profitability figures in the January 2008 consultation were 59 per cent ROCE for wholesale trunk segments in 2006/07 and 50 per cent in 2005/06. These figures were taken from BT's published current cost financial statements. Since the January 2008 consultation, BT has published its 2007/08 current cost financial statements. These restate the 2006/07 ROCE to be 45 per cent, while for 2007/08 it is 67 per cent. When we consider these figures in the leased lines charge control review, we have made various adjustments to them. Even after these adjustments, the ROCE remains well in excess of the cost of capital used at the last review (11.4 per cent). CPs do not have to buy trunk bundled with other products. In deciding whether to build their own trunk or use that of another CP or use BT's, they will be considering the charges for BT's trunk in isolation to other services from BT. Therefore we consider it is meaningful to consider the revenues of the trunk segments market in isolation. We consider that BT's high profitability in the trunk segments market tends to suggest SMP.
- 7.170 Whilst as set out in paragraph 2.30 we do not believe that passing of the three criteria test constitutes a legal requirement for the undertaking of a market review, we consider that the trunk segments market meets all three of the European Commission's criteria. In terms of the first criterion, the mere fact that other CPs have entered the trunk segments market does not imply that there are no entry barriers in the market. As noted in the January 2008 consultation, other CPs still depend significantly on BT for the supply of trunk capacity. In particular, over 50% of PPCs are still purchased with a trunk segment from BT (see paragraph 7.386 of the January 2008 consultation).
- 7.171 Entry barriers arise from the very high investments that have to be sunk in order to have a substantial presence in this market. Further, switching from acquired to self-supplied trunk segments often requires substantial investments in new interconnect and associated infrastructure. This includes circuit rearrangement costs associated with interconnection and costs associated with the transmission infrastructure necessary to support TI services. Furthermore, there are current uncertainties regarding the development of TI services (particularly their status under Next Generation Networks) which would result in a relatively short 'payback' period for investment in any self-provided trunk. This uncertainty further increases the risk associated with these investments.
- 7.172 The second criterion is discussed in the following sub Section, as part of the forward looking analysis.
- 7.173 In terms of the third criterion, we consider that in the absence of ex ante regulation, there is a significant risk that BT would only supply trunk services to other CPs on discriminatory terms, and this would reduce competition in downstream markets and result in consumer harm. As noted in the discussion of this criterion as applied to the retail market, we consider that it is more efficient to prohibit this conduct via ex ante regulation, which because of its relative ease of interpretation, administration and application, will tend to encourage greater compliance.

7.174 Furthermore, putting in place ex ante regulation enables Ofcom to place a greater emphasis on promoting competition than would be possible simply by relying on competition law. For example, Ofcom seeks to put in place a charge control in respect of BT's trunk services. It is generally acknowledged that general competition law is not an effective means to regulate prices. Courts are generally ill-equipped for the long-term and fact-intensive task involved in such a process, and are typically reluctant to engage in the ongoing monitoring role necessary to ensure that there is compliance with such regulation. This also applies to the other regulation that Ofcom intends to put in place in this market i.e. reviewing the Service Level Agreement regime, requiring BT to address issues in its accounting regime and encouraging BT to address the obstacles to replicability.

Forward looking analysis and conclusion

7.175 Our conclusion remains that BT has SMP in the wholesale trunk segments market in the UK for the reasons given in the January 2008 consultation⁷⁰ and summarised in paragraph 7.163 above.

7.176 We consider that the SMP that presently characterises the market is likely to remain for the period covered by this review. We have not been able to identify any developments that would serve to reduce the high structural barriers to entry and expansion that characterise the market, which would generate sufficient competitive pressures within the relevant timeframe to alter the current finding of SMP. In particular, Ofcom considers that the low rate of growth which characterises many of the retail leased line markets that make use of trunk segments is likely to prevent BT's wholesale competitors expanding to a scale where they can operate as efficiently as BT.

7.177 Further, Ofcom is not aware of any other CP having plans to expand its trunk network coverage in the foreseeable future. It appears likely that such expansion would be too costly and time consuming for the prospect of it to provide a substantial constraint on BT's conduct.

Retail market for low bandwidth TI leased lines (including analogue circuits and digital circuits at bandwidths up to and including 8Mbit/s) in the Hull area

January 2008 consultation

7.178 In paragraphs 7.418 to 7.424 of the January 2008 consultation, we proposed that KCOM no longer has SMP in the retail market for low bandwidth TI leased lines.

7.179 This conclusion was based largely on KCOM's low market share (25 per cent), which appears to have fallen considerably since the 2003/04 Review when it was estimated to be approximate 76 per cent. This suggests that the retail leased line market in Hull has become competitive and that there are no significant barriers to entry and expansion in the market.

⁷⁰ We have assessed BT's market share in light of the changes to aggregation nodes used to inform the break between trunk and TISBO segments. This has a minor impact as our estimate of BT's market share would be somewhere between 62% to 86%, which is similar to the estimated range in the January 2008 consultation.

Review of responses to the consultation

7.180 KCOM believed that it is no longer appropriate to define Hull as a separate market at the retail level. They argued that the Hull area is very small with a limited number of businesses that require leased line connectivity, and that leased lines, being point-to-point products, are likely to have one end of the circuit outside of the Hull area.

7.181 Another respondent made broadly similar comments to KCOM.

Ofcom's response to respondents' views

7.182 We have discussed the appropriate geographic market in Section 6.

Conclusion

7.183 Our conclusion remains that a separate retail market in the Hull area is appropriate and no operator has SMP.

Wholesale market for low bandwidth TISBOs up to and including 8Mbit/s in the Hull area

January 2008 consultation

7.184 Paragraphs 7.427 to 7.442 of the January 2008 consultation set out Ofcom's view that KCOM has SMP in the low bandwidth TISBO market. Our view was that the factors which are generally accepted to give rise to entry barriers in telecommunications markets apply strongly in this market, and that these are not offset by the high revenues which can be earned in higher bandwidth markets or in markets which provide greater opportunities for traffic aggregation.

7.185 We considered that the following factors provide strong evidence that KCOM has SMP in this market:

- KCOM's high market share (estimated to be at least 51%);
- the ubiquity of KCOM's infrastructure and the fact that this infrastructure is not easily duplicated;
- KCOM's ability to exploit economies of scale and scope; and
- the existence of significant barriers to entry and expansion, including as a result of sunk costs.

Review of responses to the consultation

7.186 KCOM responded that they enjoy a strong market position local to Hull in wholesale TISBO markets, but that no abuse has taken place and therefore there has been no market failure. On this basis they oppose the proposed wholesale regulation of TISBOs in Hull.

7.187 None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

Ofcom's response to respondents' views

7.188 KCOM's argument on the appropriate regulatory remedy is discussed in Section 8.

Forward looking analysis and conclusion

7.189 Our conclusion remains that KCOM has SMP in this market for the reasons set out in paragraph 7.185 above.

7.190 We have assessed whether the SMP that presently characterises the market is likely to be attenuated during the period covered by this review. We have not been able to identify any developments that would serve to reduce the high structural barriers to entry that characterise the market, which would generate sufficient competitive pressures within the next four years to alter the current finding of SMP. We therefore consider that the barriers to entry and expansion that currently exist are likely to continue for the next four years.

Wholesale market for high bandwidth TISBOs above 8Mbit/s up to and including 45Mbit/s in the Hull area

January 2008 consultation

7.191 Paragraphs 7.443 to 7.459 of the January 2008 consultation set out Ofcom's view that KCOM has SMP in the high bandwidth TISBO market in Hull. We considered that the following factors provided strong evidence that KCOM has SMP in this market:

- KCOM's very high market share, estimated to be 80%, which appeared to have risen since the last review;
- the ubiquity of KC's infrastructure and the fact that this infrastructure is not easily duplicated;
- KCOM's ability to exploit economies of scale and scope; and
- the existence of significant barriers to entry and expansion, including as a result of sunk costs.

Review of responses to the consultation

7.192 As above, KCOM responded that they enjoy a strong market position local to Hull in wholesale TISBO markets, but that no abuse has taken place and therefore there has been no market failure. On this basis they oppose the proposed wholesale regulation of TISBOs in Hull.

7.193 None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

Ofcom's response to respondents' views

7.194 KCOM's argument on the appropriate regulatory remedy is discussed in Section 8.

Forward looking analysis and conclusion

7.195 Our conclusion remains that KCOM has SMP in this market for the reasons set out in paragraph 7.191 above.

7.196 We have assessed whether the SMP that presently characterises the market is likely to be attenuated during the period covered by this review. We have not been able to identify any developments that would serve to reduce the high structural barriers to entry that characterise the market, which would generate sufficient competitive pressures within the next four years to alter the current finding of SMP. We therefore consider that the barriers to entry and expansion that currently exist are likely to continue for the next four years.

Wholesale very high bandwidth 155 Mbit/s TISBO market in the Hull area

January 2008 consultation and July 2008 consultation

7.197 Paragraphs 5.98 to 5.101 of July 2008 consultation summarised the reasons for Ofcom's view that KCOM has SMP in this market. In particular, our proposal was based on:

- KCOM's very high market share (98%);
- the ubiquity of KCOM's infrastructure and the fact that this infrastructure is not easily duplicated;
- KCOM's ability to exploit economies of scale and scope; and
- the existence of significant barriers to entry and expansion, including as a result of sunk costs.

7.198 The full reasons were set out in paragraphs 7.460 to 7.477 of the January 2008 consultation. This analysis related to all TISBOs over 45 Mbit/s. However, for the reasons set out in the July 2008 consultation, we have introduced a further break in the product market by introducing a separate market for TISBOs over 155 Mbit/s. As there are no TISBO circuits in the Hull area over 155 Mbit/s, the analysis set out in the January 2008 consultation for the market we were then proposing applies to the market as now defined.

Review of responses to the consultation

7.199 As above, in response to the January 2008 consultation, KCOM argued that they enjoy a strong market position local to Hull in wholesale TISBO markets, but that no abuse has taken place and therefore there has been no market failure. On this basis they oppose the proposed wholesale regulation for TISBOs in Hull. KCOM did not respond to our July 2008 consultation.

7.200 None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

Ofcom's response to respondents' views

7.201 KCOM's argument on the appropriate regulatory remedy is discussed in Section 8.

Forward looking analysis and conclusion

- 7.202 Our conclusion remains that KCOM has SMP in this market for the reasons set out in paragraph 7.197 above.
- 7.203 We have assessed whether the SMP that presently characterises the market is likely to be attenuated during the period covered by this review. We have not been able to identify any developments that would serve to reduce the high structural barriers to entry that characterise the market, which would generate sufficient competitive pressures within the next four years to alter the current finding of SMP. We therefore consider that the barriers to entry and expansion that currently exist are likely to continue for the next four years.

Wholesale very high bandwidth 622 Mbit/s TISBO market in the Hull area

July 2008 consultation

- 7.204 Paragraphs 5.102 to 5.105 of July 2008 consultation set out the reasons for Ofcom's view that no operator has SMP in this market. These are summarised below.
- 7.205 There are currently no TISBO circuits over 155 Mbit/s in the Hull area. As the incumbent fixed line operator in the Hull area, KCOM would be the most likely candidate were any operator to be considered to have SMP
- 7.206 KCOM would probably have greatest scope to take advantage of any economies of scope. However, as with this market in the rest of the UK, we believe that economies of scope are less likely to create significant advantages for very high bandwidth 622 Mbit/s TISBO services compared to the lower bandwidth TISBO markets, because of relatively high revenues that can be earned.
- 7.207 In the event that demand for 622 Mbit/s circuits did emerge in the Hull area, it may be appropriate to undertake a more substantive SMP assessment. In the absence of such demand, and based on the fact that we do not consider that economies of scope are large in this market, we conclude that no operator has SMP in the wholesale very high bandwidth 622 Mbit/s TISBO market in the Hull Area.

Review of responses to the consultation

- 7.208 For the markets in Hull where we found no SMP, KCOM agreed with our findings.
- 7.209 The only other respondent to comment specifically on this market agreed with our finding of no SMP, though believed that Ofcom should maintain a close eye on the situation if demand for 622 Mbit/s TISBOs emerged in the Hull area.

Conclusion

- 7.210 We conclude that no operator has SMP in the wholesale very high bandwidth 622 Mbit/s TISBO market in the Hull area, for the reasons set out above.

Wholesale market for low bandwidth AISBOs up to and including 1Gbit/s in the Hull area

January 2008 consultation

7.211 Paragraphs 7.478 to 7.494 of the January 2008 consultation set out Ofcom's view that KCOM has SMP in the low bandwidth AISBO market in the Hull area. Our view was that the factors which are generally accepted to give rise to entry barriers in telecommunications markets apply strongly in this market. These are not offset by the high revenues which can be earned in higher bandwidth markets or in markets which provide greater opportunities for traffic aggregation.

7.212 Ofcom considered that the following factors provide strong evidence that KCOM has SMP in this market:

- KCOM's high market share, estimated to be at least 67%;
- the ubiquity of KCOM's infrastructure and the fact that this infrastructure is not easily duplicated;
- KCOM's ability to exploit economies of scale and scope; and
- the existence of significant barriers to entry and expansion, including as a result of sunk costs.

Review of responses to the consultation

7.213 KCOM did not agree with the continued imposition of regulatory remedies, though did not explicitly disagree with the finding of SMP. None of the other respondents who commented on these proposals disagreed with Ofcom's market power findings.

Ofcom's response to respondents' views

7.214 KCOM's comments on the appropriate regulatory remedies are discussed in Section 8.

Forward looking analysis and conclusion

7.215 We conclude that KCOM has SMP in the wholesale market for low bandwidth AISBOs up to and including 1Gbit/s in the Hull area, for the reasons set out in paragraph 7.212 above.

7.216 We have assessed whether the SMP that presently characterises the market is likely to be attenuated during the period covered by this review. We have not been able to identify any developments that would serve to reduce the high structural barriers to entry that characterise the market, which would generate sufficient competitive pressures within the next four years to alter the current finding of SMP. We consider that the barriers to entry and expansion that currently exist are likely to continue for the next four years.

Wholesale market for high bandwidth AISBOs over 1Gbit/s in the Hull area

Summary of proposals

7.217 In paragraphs 7.495 to 7.511 of the January 2008 consultation, Ofcom set out its view that KCOM has SMP in the high bandwidth AISBO market in the Hull area. This conclusion was partly based on an understanding that KCOM had a 100 per cent market share.

Revised proposals

7.218 However, it has since become apparent that there are no high bandwidth AISBO circuits sold in the Hull area. We have therefore reconsidered our preliminary conclusion.

7.219 While there are currently no high bandwidth AISBO circuits in Hull, it nevertheless makes sense to consider whether any operator is likely to have SMP should demand for such services materialise in the future. This is considered below.

7.220 As the incumbent fixed line operator in the Hull area, KCOM would be the most likely candidate were any operator to be considered to have SMP. KCOM may have advantages, especially in terms of its ability to exploit economies of scale and scope given the ubiquity of its infrastructure in the Hull area and its high market share in other markets.

7.221 In the high bandwidth AISBO market in the UK excluding the Hull area, we concluded that BT does not have SMP, because we considered that the very high revenues that can be earned in the downstream retail markets mean that OCPs are generally willing to sink the high fixed costs that are necessary to operate in this market. Further, the very large amount of traffic that can be carried over a single high bandwidth AISBO service enables OCPs to attain scale in this market and prevent other factors such as economies of scope from placing BT at a cost advantage. We considered that these conclusions are reflected in the relatively unconcentrated nature of the market in the rest of the UK.

7.222 We consider that these factors are also likely to apply in the Hull area. The revenues that can be earned in the downstream retail markets mean that OCPs are likely to be willing to sink the high fixed costs that are necessary to operate in this market. Further, the very large amount of traffic that can be carried over a single high bandwidth AISBO service enables OCPs to attain scale in this market and prevent other factors, such as economies of scope, from placing KCOM at such a cost advantage that it would necessarily have SMP.

7.223 In the event that demand for high bandwidth AISBO circuits did emerge in the Hull area, it may be appropriate to review this finding. In the absence of such demand, and based on the above reasoning, we conclude that no operator has SMP in this market.

7.224 For the reasons set out above, we now propose to find that no operator has SMP in the Hull area for high bandwidth AISBOs.

Question 1: Do stakeholders agree with our revised proposal not to find any operator to have SMP in the high bandwidth wholesale AISBO market in the Hull area?

Section 8

Regulatory remedies and impact assessment

Introduction

- 8.1 In this Section Ofcom sets out the regulatory remedies it is imposing on BT and KCOM in those markets where in Section 7 they have been found to have SMP. This Section also includes an Impact Assessment, as defined in Section 7 of the Communications Act (the Act).
- 8.2 Having considered respondents comments on the market definition and SMP analysis in both the January 2008 and July 2008 consultations, we have finalised in Section 3 to 7 our market definitions and findings of SMP for the markets covered by this review.
- 8.3 BT has been found to have SMP in the following markets for retail leased lines, wholesale symmetric broadband origination terminating segments, and trunk segments in the UK, excluding the Hull area:
- Retail market for low bandwidth TI leased lines;
 - Wholesale market for low bandwidth TISBO;
 - Wholesale market for high bandwidth TISBO in the UK excluding the CELA;
 - Wholesale market for very high bandwidth 155 Mbit/s TISBO in the UK excluding the CELA;
 - Wholesale market for low bandwidth AISBO; and
 - Wholesale trunk segments.
- 8.4 In Section 7 we also concluded that KCOM has SMP in the following markets for wholesale symmetric broadband origination terminating segments in the Hull area:
- Wholesale market for low bandwidth TISBO;
 - Wholesale market for high bandwidth TISBO;
 - Wholesale market for very high bandwidth 155 Mbit/s TISBO; and
 - Wholesale market for low bandwidth AISBO.
- 8.5 This Section is organised as follows. Firstly, we set out the legal framework for setting SMP conditions on undertakings found to have SMP in an electronic communications market.
- 8.6 We then consider the imposition of remedies on BT. We first set out what the current obligations on BT are, and then move on to review, for each market where BT has

been found to have SMP, what the appropriate obligations should be going forward, including obligations relating to interconnection and accommodation services.

- 8.7 We then move on to consider the imposition of remedies on KCOM. We first set out what the current remedies applying to KCOM are, and then move on to consider, for those markets where KCOM has been found to have SMP, what the appropriate remedies should be going forward. Finally, we consider what regulatory accounting obligations should apply to BT and KCOM in the future in relation to those retail and wholesale leased lines markets where we have found them to have SMP.

The legal framework for imposing SMP conditions

- 8.8 When considering the setting of SMP conditions, Ofcom has had regard to its duties under the Act and the European Commission's framework for the regulation of electronic communications networks and services. It has also taken utmost account of relevant guidelines and common positions produced by the European Commission (the Commission), the European Regulators' Group (ERG), Oftel and Ofcom.
- 8.9 Section 87(1) of the Act, which implements Art. 8 of the Access Directive, provides that, where Ofcom has made a determination that a person is dominant in a particular market, it shall set such SMP conditions as it considers appropriate and as are authorised under the Act.
- 8.10 In assessing the appropriateness of regulatory remedies Ofcom has taken into account paragraphs 21 and 114 of the Commission's SMP Guidelines which state that NRAs must impose one or more appropriate SMP services conditions on a dominant provider, and that in the view of the Commission it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP.
- 8.11 The Act sets out the conditions Ofcom may impose if it finds that any undertaking has SMP. Sections 87 to 92 of the Act implement Articles 9 to 13 of the Access Directive and Articles 17 to 19 of the Universal Service Directive.
- 8.12 The SMP conditions which Ofcom is authorised to impose on a dominant provider include requirements to do the following:
- To provide network access to the relevant network and facilities;
 - Not to discriminate unduly in their provision;
 - Obligations to secure transparency in relation to interconnection and/or network access; and
 - To maintain separated accounts.
- 8.13 Ofcom may also impose:
- Price controls;
 - Rules about the recovery of costs and cost orientation;
 - Rules about the use of cost accounting systems; and
 - Rules about the adjustment of prices.

- 8.14 In considering the remedies to impose, we have also had regard to our general duties as set out in Section 3 of the Act. Section 3(1) states that Ofcom's principal duty is to further the interests of citizens in relation to communications matters and of consumers in relevant markets, where appropriate, by promoting competition. Specifically, Section 3(2)(b) states that Ofcom is required to secure the availability of a wide range of electronic communications services throughout the UK.
- 8.15 Section 3(4)(b) explains that, in meeting these requirements, Ofcom must have regard to the desirability of promoting competition in relevant markets. Section 3(4)(e) states that Ofcom must have regard, in performing its duties, to the desirability of encouraging the availability and use of high speed data transfer services throughout the UK. Also, pursuant to Section 3(5) of the Act, in furthering the interests of consumers, Ofcom must have regard to choice, price, quality of service and value for money.
- 8.16 Section 4 of the Act sets out the duties of Ofcom to act in accordance with its Community obligations which flow from Article 8 of the Framework Directive, and include the duties:
- To promote competition;
 - To contribute to the development of the internal market;
 - To promote the interests of all EU citizens;
 - Not to favour one type of network, service or facility over another;
 - To encourage network access and service interoperability in order to promote efficiency and competition; and
 - To encourage compliance with relevant international standards.
- 8.17 Ofcom is also required under Section 6 of the Act to ensure that regulation by Ofcom does not involve the imposition or maintenance of unnecessary burdens and to consider the scope for effective self-regulation.
- 8.18 When considering our proposals, we have also taken particular account of:
- The Commission's SMP Guidelines⁷¹;
 - The Access Guidelines published by Oftel in September 2002(the 2002 Access Guidelines)⁷²;
 - The Revised ERG Common Position on the approach to appropriate remedies in the regulatory framework for electronic communications networks and services (the ERG Remedies Position)⁷³; and

⁷¹ Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03).

⁷² These guidelines can be found at

http://www.ofcom.org.uk/static/archive/oftel/publications/ind_guidelines/acce0902.htm.

⁷³ See http://erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf

- The ERG Common Position on Wholesale Leased Lines remedies⁷⁴ (ERG WLL CP).

8.19 Recital 15 of the Recommendation on Relevant Markets⁷⁵ set out that:

“Regulatory controls on retail services should only be imposed where national regulatory authorities consider that relevant wholesale measures or measures regarding carrier selection or pre-selection would fail to achieve the objective of ensuring effective competition and the fulfilment of public interest objectives. By intervening at the wholesale level, including with remedies which may affect retail markets, Member States can ensure that as much of the value chain is open to normal competition processes as possible, thereby delivering the best outcomes for end-users.”

8.20 Ofcom agrees with the Commission’s view. Regulation at the wholesale level can serve a twofold purpose. First, it can be used to address SMP concerns in the relevant wholesale market. Second, this might, in turn, increase competition in the downstream markets that rely on these wholesale inputs and render retail regulation unnecessary.

8.21 The Commission’s SMP Guidelines state at paragraph 15 that regulation should aim to promote an open and competitive market, and at paragraph 16 that *ex ante* regulations should be imposed to ensure that an SMP provider cannot use its market power to restrict or distort competition on the relevant market or leverage market power into adjacent markets.

8.22 The 2002 Access Guidelines describe the circumstances in which Ofcom would consider the imposition of wholesale access obligations to be appropriate, give guidance on the nature of the wholesale products Ofcom would expect to be supplied as a result of an obligation to provide access, and describe the conditions under which products should be made available.

8.23 As well as being appropriate, as required by Section 87(1) of the Act, each SMP condition must also satisfy the tests set out in Section 47(2) of the Act. These are that each condition must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

8.24 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

⁷⁴ See http://erg.eu.int/doc/publications/erg_07_54_wll_cp_final_080331.pdf

⁷⁵ See: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:344:0065:0069:EN:PDF>

- there is a risk of adverse effect from price distortion; and
 - that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and confer the greatest possible benefits on end-users.
- 8.25 Paragraph (3) of Section 88 further sets out that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:
- so fix and maintain some or all of its prices at an excessively high level, or
 - so impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.
- 8.26 According to Section 91 of the Act, which implements Article 17 of the Universal Service Directive (2002/22/EC), in order to impose SMP service conditions at the retail level, Ofcom further needs to be able to demonstrate, that it would not be able to fully perform its duties under Section 4 with wholesale regulation alone.
- 8.27 It is Ofcom's view that the SMP service conditions imposed on KCOM and BT in this Section satisfy the relevant requirements specified in the Act and relevant Directives. This is explained later in this Section.

Impact Assessment

- 8.28 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in Section 7 of the Act, which states that generally we have to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see our guidelines "Better policy-making: Ofcom's approach to impact assessment" which are on our website⁷⁶.
- 8.29 In this Statement, the impact assessment is included in this Section alongside the discussion of the appropriate remedies for each market where we have found SMP in Section 7. Those assessments along with the assessment set out in the January 2008 consultation and July 2008 consultation constitute Ofcom's impact assessment for this market review. We have not, in this document repeated our assessment of the impacts of our different available options on different groups of stakeholders. This is because we did not receive any comments on our original assessments in the January and July 2008 consultations and our original assessments remain valid.

Revocation of existing remedies

- 8.30 The 2003/04 Review imposed SMP conditions on BT and KCOM in a number of markets. In some of those markets, our analysis indicates that SMP no longer exists. In others, new SMP conditions are proposed, on the basis of either new or existing market definitions. In either case, all of the SMP conditions introduced by the 2003/04 Review should no longer apply, once this Statement is published.

⁷⁶ http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf

Review of regulatory remedies - BT

- 8.31 In the January 2008 consultation, we asked the following questions in relation to our proposed remedies for markets where BT was found to have SMP:

Question 16: Do stakeholders agree with our assessment of the appropriate regulatory option and our proposed remedies for the wholesale TISBO markets in the UK excluding the Hull area?

Question 17: Do stakeholders agree with our assessment of the appropriate regulatory option and our proposed remedies for the wholesale low bandwidth AISBO market in the UK excluding the Hull area?

Question 18: Do stakeholders agree with our assessment of the appropriate regulatory option and our proposed remedies for the wholesale trunk market?

Question 19: Do stakeholders agree with Ofcom's assessment about the appropriate regulatory option and our proposed remedies for the retail low bandwidth TI market in the UK? In particular, do you think that Ofcom should accept BT's proposed voluntary undertakings that it will continue to supply new analogue and sub-2Mbit/s retail circuits until 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying platform is closed at an earlier date; that it will not increase its prices for analogue services more quickly than the rate of inflation (RPI-0%) for a period two years following the publication of the LLMR statement i.e. from 2008 to 2010; and that it will commit to a further two-year cap, the level of which would be agreed with Ofcom prior to 2011?

- 8.32 In the July 2008 consultation, we further asked the following question in relation to the market for wholesale very high bandwidth 155 Mbit/s TISBO in the UK excluding the CELA, where we proposed to find BT to have SMP:

Question 10: Do stakeholders agree with our assessment of the appropriate regulatory option and our proposed remedies for the wholesale very high bandwidth 155 Mbit/s TISBO market in the UK excluding the CELA and the Hull area?

- 8.33 In this sub Section dedicated to reviewing BT's remedies, we first set out the remedies that currently apply to BT as a result of the 2003/04 Review. Secondly, for each of the markets where we concluded in Section 7 that BT had SMP, we present a summary of the proposals put forward in the January and July 2008 consultations. We then discuss the responses received and provide Ofcom's response to the issues raised. Finally, having regard to all consultation responses and all evidence available to us, we review our the assessment of regulatory options, the proposed remedies, and our conclusions with respect to the appropriate remedies that will apply to BT in each of the markets where it has been found to have SMP.

The existing regulatory obligations on BT

Retail markets

- 8.34 In the 2003/04 Review, BT was found to have SMP in the market for analogue and low bandwidth retail TI leased lines, comprising analogue and digital services at speeds up to and including 2 Mbit/s and 8 Mbit/s. This was the only retail product market in which SMP was found and hence in which remedies could be imposed. As a result of the SMP finding, the following remedies were imposed:

- an obligation to supply on reasonable request the minimum set of retail leased lines and to continue to supply existing 8Mbit/s retail TI leased lines being provided on the date the conditions entered into force;
 - a requirement not to unduly discriminate;
 - for all leased lines in this market, a requirement to publish a reference offer (obligation to publish current prices, terms and conditions; and same day price notification); and
 - a requirement to publish information concerning delivery and repair times.
- 8.35 In addition, Ofcom accepted from BT a voluntary undertaking not to increase the weighted average price of analogue and 8 Mbit/s leased lines by more than RPI before June 2006 or the implementation of the next market review, whichever was the earlier, combined with cost orientation and a cost accounting system to take effect only if BT breaches this voluntary undertaking.
- 8.36 For digital retail leased lines, Ofcom decided to rely on the increased competition expected as a result of wholesale regulation, in particular the price control on symmetric broadband origination PPC services, to constrain prices at the retail level.

Wholesale markets

- 8.37 The 2003/04 Review found BT to have SMP in the wholesale markets for low and high bandwidth TISBO, AISBO at all speeds, and trunk segments. As a result of the SMP findings, a series of regulatory obligations were imposed on BT in these markets:
- a general obligation to provide access on reasonable request;
 - a requirement not to unduly discriminate;
 - basis of charges obligations (cost orientation and a cost accounting system);
 - charge controls (only for TISBO products and services);
 - accounting separation obligations;
 - a requirement to publish a reference offer;
 - an obligation to give 90 days notice of changes to prices, terms and conditions for existing TI symmetric broadband origination services;
 - an obligation to give 28 days notice of the introduction of prices, terms and conditions for new TI symmetric broadband origination services;
 - same day notification of changes to prices, terms and conditions for wholesale trunk segment products;
 - a requirement to provide quality of service information;
 - a requirement to notify technical information with 90 days notice; and

- obligations relating to requests for new network access.

8.38 BT is also subject to:

- a Direction under the general access condition to provide Partial Private Circuits (PPCs) at a range of bandwidths, Radio Base Station (RBS) backhaul link products, and Local Loop Unbundling (LLU) backhaul products, subject to specific terms and conditions;
- a Direction under the cost orientation condition covering pricing matters relating to PPCs and LLU backhaul; and
- a Direction under the quality of service condition to require specific information in respect of PPCs.
- a Direction under the general access condition to provide Ethernet-based LLU backhaul products, subject to specific terms and conditions; and
- a Direction under the cost orientation condition covering pricing matters relating to Ethernet-based LLU backhaul.

Cost accounting and accounting separation obligations

8.39 BT is currently subject to cost accounting and accounting separation requirements in a range of markets in which they have been found to have SMP, including the leased lines markets covered by the 2003/04 Review. Those requirements were set out in a Statement issued in July 2004 (the 2004 Statement on Regulatory Reporting)⁷⁷.

Interconnection and accommodation services

8.40 For those wholesale markets where BT was found to have SMP in the 2003/04 Review, Ofcom had also identified the need to impose obligations relating to certain accommodation and interconnection services in addition to the SMP Conditions in the relevant SMP markets. As a result, BT is currently subject to certain obligations in relation to the following services:

- In Span Handover (ISH);and
- Customer sited Handover (CSH).

Wholesale market for low bandwidth TISBO in the UK

Introduction

8.41 In this sub Section, we set out the regulatory obligations that we impose on BT as a result of our finding of it having SMP in the provision of low bandwidth TISBO in the UK excluding the Hull area.

8.42 We first provide a summary of the proposals as set out in the January 2008 consultation. Secondly, we review the responses to the consultations and provide our response to the issues raised. Thirdly, we review the choice of the appropriate

⁷⁷ http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/

remedies, having regard to all the responses and available evidence available to us. We then set out our conclusions and the remedies we have decided to impose on BT.

- 8.43 The last part of this sub Section sets out how we believe our obligations comply with the relevant tests in the Act. In addition, we set out how we have taken into account the ERG WLL CP in setting our obligations.

Summary of proposals

- 8.44 In paragraphs 7.187 to 7.239 of the January 2008 consultation we set out our proposals in support of the finding of SMP for BT in this market. We have now confirmed in Section 7 the SMP finding on BT. In the table below, we set out the key findings in support of our view.

Table 8.1 Key market power indicators

	Wholesale low bandwidth TISBO market	Downstream retail market
<i>Quantitative indicators</i>		
Market Share	89% (was 84-88% in the 2003/04 Review)	80%(was 84-88% in the 2003/04 Review)
Profitability	Potentially above the low returns shown in the Regulatory Accounts due to shortcomings, among other things, in the transfer charging regime	Above the level expected to be found in competitive markets
<i>Qualitative indicators</i>		
The ubiquity of BT's infrastructure and the fact that such infrastructure is not easily duplicated		
BT's ability to exploit economies of scale and scope		
The existence of significant barriers to entry and expansion, including as a result of sunk costs		

- 8.45 In paragraphs 8.109 to 8.179 of the January 2008 consultation we then reviewed the regulatory options available to us, identified which option we believed would most appropriately serve our policy objectives, and which remedies, if any, should apply to BT in relation to its proposed SMP determination in the provision of low bandwidth TISBO in the UK excluding the Hull area. We present a summary of that assessment in the following paragraphs.

Options assessment

- 8.46 Before setting out our analysis of appropriate remedies, we considered broader policy options and how best we could meet our policy objectives considering BT's SMP finding. As set out in paragraphs 8.33 to 8.37 of the January 2008 consultation, our policy objectives included protecting the interests of consumers and promoting competition. We considered two main policy options, namely keeping the existing regulation or varying it to address the shortcoming we had identified, against the counterfactual of not imposing any regulation at all.
- 8.47 In particular, in the January 2008 consultation, we considered the following regulatory options:

- *No regulation*;
 - *Status quo*, which means to continue to regulate BT's provision of low bandwidth TISBO, with the same SMP Conditions as set out in the 2003/04 Review; and
 - *Variations and additional measures*, including: reviewing the SLA/SLGs regime; applying an amended interpretation of the no undue discrimination obligation, under which we would presume that saw-tooth discounts are unduly discriminatory; requiring BT to address flaws in the PPC regulatory accounting regime; encouraging BT to address the other obstacles to replicability identified in the 2006 review; and seeking a commitment from BT to consult on the introduction of more efficiently designed SDH access and backhaul products.
- 8.48 In paragraphs 8.109 to 8.136 of the January 2008 consultation, for each option we considered how well it would serve our policy objectives, including furthering consumers' interests and promoting competition in downstream retail markets, and the impact it would have on the various key stakeholders, especially consumers.
- 8.49 Given our proposal to find that BT had SMP in this market, we set out why we believed that other providers would require regulated access from BT to be able to compete effectively in downstream retail leased lines markets. In our view, BT's market power is, *inter alia*, derived from its control of bottleneck infrastructure, in particular copper loops, which cannot be readily duplicated by competitors, given the importance of sunk costs and presence of economies of scale and scope. We had found BT to have very high market share over a period of several years, which was also reflected in the downstream retail market. In the absence of regulation, we argued, BT would be able to exploit its market power by restricting access to its network and then leveraging its market power into downstream market, thereby reducing end user access to a choice of competitive services and prices. We considered therefore that the option of no regulation would poorly serve our objectives.
- 8.50 We considered that the current regulation have had only had limited success in achieving Ofcom's policy objectives. In particular, they have not been successful in promoting competition in this market or the associated downstream market, in which BT's market share had risen marginally, to 80% against the 78% found in the 2003/04 Review.
- 8.51 Having found that some regulation was likely to be appropriate, we considered the scope for improving the current regime

Pricing and cost orientation

- 8.52 Firstly, as set out at paragraph 7.194 and following of the January 2008 Consultation, we had concerns that BT's true profitability for these services might be above the low returns showed in its Regulatory Statement at the time of the January 2008 consultation. In particular, there were some grounds for considering that BT may have been undercharging its downstream divisions for low bandwidth TISBO, and that its regulatory accounts may consequently have understated the real profitability of these services⁷⁸. One of the reasons was that, as set out in Annex 13 of the

⁷⁸ Even though, as stated at paragraph 7.198 and following of the January 2008 consultation, we did not put too much weight on BT's profitability, the concerns about undercharging to the retail arms were material and had been thoroughly analysed by Ofcom. Further references to our findings in this area were provided at paragraph 7.199 and in Annex 13 of the January 2008 consultation.

January 2008 consultation, we found that BT's retail leased lines were not yet economically and technically replicable by its competitors⁷⁹, potentially putting them at a disadvantage in competing with BT in downstream retail markets. While the SMP assessment did not rest on the replicability findings, these findings highlighted that in some respects the way that BT had implemented the remedies imposed by the 2003/04 Review may have created further obstacles to the promotion of competition in the downstream market. It is also worth noting that PPCs are not subject to a requirement for Equivalence of Input (EOI) under BT's Enterprise Act Undertakings, meaning that BT retail consumes a different network product than its competitors. In the absence of an EOI obligation, abuses of dominance such as non price discrimination are harder to deter and detect. It is therefore even more important that replicability is achieved if competition is to flourish in the downstream retail market.

SLAs/SLGs regime

8.53 In addition, two particular problems have emerged since the last review with the existing SLAs/SLGs regime for PPCs, which was considered ineffective by both BT and the OCPs. Firstly, the KPIs used to monitor BT's performance against BT's regulated SLAs were deemed to be ineffective. Secondly, there appeared to be a difference between the contractual SLGs for BT's wholesale Ethernet products and that for its TDM wholesale products, particularly PPCs.

SDH disaggregated access and backhaul

8.54 We also considered that the development of disaggregated access and backhaul products by BT could in the future support greater competition at least in backhaul services⁸⁰, where alternative providers should be able to take advantage of aggregation opportunities and increase the reach of their backhaul infrastructures. We therefore considered that BT and the rest of the industry should continue to engage on how best to meet future requirements for disaggregated products, having regard for the obligations set out in BT's Undertakings.

No undue discrimination

8.55 We also remained concerned that saw-tooth discounts, which are offered by BT on some products, could act as a barrier to market entry or expansion and, in a market characterised by SMP, could restrict the development of competition⁸¹. We argued that, given their potentially anti-competitive effects, we were inclined to the view that there should be a presumption that saw-tooth discounts are unduly discriminatory in the future. In future, therefore, we would generally presume that such discounts are in breach of an SMP requirement not to discriminate unduly, although we would have to judge each alleged breach on a case by case basis.

⁷⁹ As stated in Annex 13 of the January 2008 consultation, Ofcom started to work on the replicability of BT's retail leased lines in 2005, after the completion of the TSR. We then issued the Replicability Statement in September 2006, where we set out the problems with the way BT was implementing the existing SMP obligations imposed by the 2003/04 Review.

⁸⁰ Ofcom conducted a study of Converged Backhaul in 2007, where it found that if in the future competition in backhaul is to emerge, competitive providers have to have, among other things, access to disaggregated access and backhaul products, as set out in BT's Undertakings, if they are to take advantage of emerging opportunities for greater economies of scale in backhaul through the aggregation of convergent traffic from voice, leased lines and broadband.

⁸¹ Ofcom had previously received a complaint on BT's saw tooth discounts offered in conjunction with the Netstream tariff in August 2003. Further reference is provided at paragraph 8.123 and following of the January 2008 consultation.

Other measures

- 8.56 We also considered in the January 2008 consultation that it would be worth considering, among other things, the scope for more radical remedies such as dark fibre in the access network through a review of the dark fibre market. Annex 10 to the January 2008 consultation set out our considerations with respect to a potential review of dark fibre in the access network, and asked stakeholders to comment on it.

Conclusion on choice of option

- 8.57 For the reasons just discussed, our preliminary conclusion in paragraphs 8.134 to 8.136 of the January 2008 consultation was that the third option would be best in terms of meeting our policy objectives of furthering consumers' interests and promoting greater competition in the downstream retail market.
- 8.58 We argued that, if competition in the retail market is to flourish, BT should still be required to provide access on regulated and transparent terms and conditions. There was a need, however, for some specific improvements, to improve the prospects for effective competition in downstream markets. We therefore suggested that we should adopt the following variations and additional measures:
- review the SLAs/SLGs regime;
 - work with BT to address the obstacles to replicability, including the flaws in the regulatory accounting regime;
 - seek a commitment from BT to consult on the launch of disaggregated SDH products that would represent a future EoI input for SDH leased lines; and
 - clarify our interpretation of undue discrimination in relation to saw tooth discounts.

Preliminary conclusions: proposed regulatory obligations

- 8.59 In the January 2008 consultation we set out in paragraphs 8.137 to 8.177 why we thought it would be appropriate to impose on BT certain obligations relating to the provision of network access on regulated terms and conditions, including prices. We proposed the following obligations should apply to BT:
- an obligation to provide Network Access;
 - a requirement not to unduly discriminate;
 - cost orientation;
 - requirement to publish a reference offer;
 - an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
 - an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
 - a requirement to publish quality of service information;

- a requirement to notify technical information with 90 days notice; and
 - obligations relating to requests for new network access.
- 8.60 In addition, we argued that Ofcom should consider further the imposition of charge controls, including a review of the charge controls going forward after the current control expired in September 2008 and considering the possibility of extending it to wholesale SDSL. We indicated that our intention was to consult separately on the proposed charge control.
- 8.61 With respect to the types of access BT should provide, we considered that BT shall continue to be subject to the PPC Direction and the requirement to provide RBS Backhaul. However, we considered that we should lift the LLU Backhaul requirement currently imposed on BT.
- 8.62 With respect to SLAs/SLGs, we proposed to amend the current PPC Direction to reflect the work that was being done by the OTA and industry on KPIs and, once Ofcom's work on Ethernet SLAs/SLGs would be completed, to align the SLGs in the PPC regime with those of the Ethernet regime.
- 8.63 We proposed to continue to engage with BT to ensure that any reasonable request for disaggregated access and backhaul products is properly considered, and that such new services are promptly developed.
- 8.64 Finally, we set out our view that, in the future, Ofcom should be inclined to the view that there should be a presumption that saw-tooth discounts are unduly discriminatory.
- 8.65 Paragraph 8.179 of the January 2008 consultation had a discussion of how we thought the proposed remedies met the Communications Act tests. We have set out at the end of this sub Section the appropriate Communications Act tests in detail for each regulatory obligations we have concluded will apply to BT.

Responses to the consultations and Ofcom's response

Charge controls

- 8.66 Several respondents commented on the proposal to impose further charge controls on BT's wholesale low bandwidth TISBOs.
- 8.67 UKCTA urged Ofcom to be cautious in the setting of charge controls because, as the TISBO and AISBO markets converge, charge controls could artificially affect the rate of substitutions between the two.
- 8.68 One CP responded that they would prefer to see no charge controls at all in markets where BT has SMP, and, if introduced, there should be a price cap of RPI - 0% so as not to stifle competition.
- 8.69 Several respondents supported the renewal of charge controls, including for 64kbit/s PPCs. Cable and Wireless argued that new (lower) starting charges should be set at the start of the charge controls period. BT proposed that 64kbit/s TISBO circuits should be covered by voluntary commitments similar to those they have offered in relation to retail analogue circuits.

- 8.70 One MNO commented that they believed charge controls should be extended to RBS backhaul and RBS backhaul provided using Ethernet transmission. BT opposed this on the grounds that RBS services are expected to decline and a charge control would involve disproportionate expense. BT suggested making a voluntary commitment to keep RBS backhaul prices in line with PPC prices.
- 8.71 There were differing views on the inclusion of wholesale SDSL within the charge control. UKCTA and one CP supported the proposal. However, Cable and Wireless, the Welsh Assembly Government, and BT opposed it, with BT arguing that continuing regulation is disproportionate because, amongst other factors, the product is in decline.
- 8.72 Having considered these responses, we remain of the view charge controls should be applied to the services provided by BT in this market, given BT's dominant position and the fact that the market is not prospectively competitive. In the absence of a charge control, we consider there is a significant risk that BT could increase its charges above competitive levels, and that this could lead to higher prices in retail markets, to the detriment of consumers. We accept that there is a possibility that lower prices may deter some infrastructure investment by competing operators. However, we consider the likelihood of this occurring to be low, given the declining nature of the TISBO market. In addition, such investments may be inefficient, if they are prompted solely by prices being above competitive levels.
- 8.73 We acknowledge UKCTA's point that charge controls should not artificially affect the rate of substitution between TISBO and AISBO products, and the points raised by other stakeholders concerning the coverage of the controls, but consider that these issues can be addressed when determining the scope and form of the charge controls. We are publishing a separate consultation on the detail of our charge control proposals alongside this Statement.

Business grade wholesale broadband access products

- 8.74 UKCTA and other respondents wanted Ofcom to recognise, firstly, that the provision of business grade wholesale broadband access (asymmetric as well as symmetric) as a separate market from residential broadband services (business grade broadband) and, secondly, that such a market should be reviewed for the purpose of imposing SMP conditions on BT in this review, which, they considered, would have been found to have SMP, at least in some parts of the UK.
- 8.75 At paragraph 3.96 of this Statement, we have discussed the comments from respondents with respect to the finding of a separate market for business grade wholesale broadband access, having had regard, *inter alia*, for the market definition set out in the WBA Statement for asymmetric broadband services⁸². We have set out the reasons why we have concluded that a separate business grade wholesale broadband access market does not exist. It would therefore not be appropriate for Ofcom to consider regulatory remedies in relation to such services.
- 8.76 We further consider that the promotion of competition in the provision of broadband services to all users, including businesses, is well served by the policy set out in the WBA Statement. We do not consider therefore that this issue requires further consideration in this Statement.

⁸² <http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf>

Review of proposals for remedies

- 8.77 Having considered the responses and representations received and the evidence available to us following the consultations of January 2008 and July 2008, in this sub Section we summarise the key arguments in support of our conclusions on the appropriate remedies. A fuller analysis of the remedies was set out in paragraphs 8.137 to 8.177 of the January 2008 consultation.
- 8.78 We then complete our review for this market by setting out our final decisions on the regulatory obligations that should apply to BT as a result of our finding of SMP in this market. Finally, we set out why we believe the Communications Act tests are met, including why ex ante regulation is appropriate and reliance on competition law alone would be insufficient.

Aims of regulation

- 8.79 We set out our policy objectives in paragraphs 8.33 to 8.37 of the January 2008 consultation. Given that we have found in Section 7 that BT has SMP in this market, we consider that regulation should have the following principal aims in this market:
- to protect wholesale customers and, via the retail market, consumers from the exploitation of that SMP, for example to protect them from excessive prices; and
 - to promote competition in the retail market by ensuring that SMP in this wholesale market is not leveraged into downstream retail markets.
- 8.80 Restricted competition in the associated retail markets is likely to be detrimental to end users as it could result in higher prices, poorer customer service and less choice. Although the retail markets could themselves be regulated, in general competition is more effective at delivering benefits to consumers than regulation.
- 8.81 The justification for the remedies we are imposing is summarised below. In doing this, we have divided the specific conditions into the following four categories:
- network access;
 - prohibition of undue discrimination;
 - cost orientation; and
 - transparency and notification obligations.
- 8.82 We discuss our conclusions on cost accounting and accounting separation obligations separately at the end of this Section.

Network Access

- 8.83 As set out in Section 7, BT has SMP in this market. Access to BT's network is important in enabling BT's competitors to compete in the retail market, as alternative access infrastructures account for only 20% of the total access infrastructures in this market. Without an obligation to provide wholesale services to rival CPs, including an obligation to provide interconnection services, BT is likely to have an incentive to refuse to provide access and leverage its market power into the downstream retail market. In order to meet the objective of promoting competition in the retail market, an obligation to provide network access is required. As discussed further later in this

Section when setting out the relevant Communications Act tests, ex ante regulation is likely to be more effective in promoting competition in the downstream retail market than ex post competition law.

- 8.84 BT is currently subject to access obligations relating to the provision of specific access products: PPCs (PPC Direction), LLU Backhaul (LLU Backhaul Direction) and an obligation to provide RBS Backhaul. As set out in paragraph 8.143 to 8.146 of the January 2008 consultation, we consider PPCs remain the relevant products for supporting third party access to BT's network. While PPCs are not used by BT itself, its competitors have increased their take up of PPCs across all bandwidths available, and have thus been able to compete in downstream markets. If we were to lift the PPC Direction, and in the absence of other suitable substitute products from BT, BT could change the product terms and conditions and technical specification in order to restrict or disrupt competition. We therefore consider that it is appropriate for BT to continue to be subject to the PPC Direction.
- 8.85 With respect to RBS Backhaul, we found that MNOs had migrated in recent years a substantial portion of their retail leased lines to RBS Backhaul services, which now account for a large proportion of all their backhaul requirements. We consider that, having regard for the representations received from MNOs that they intend to continue to consume such products for the foreseeable future, BT should continue to be subject to the requirement to provide RBS backhaul.
- 8.86 On the other hand, we found that there had not been any significant demand in recent years for TI LLU Backhaul. We concluded at paragraph 5.79 in Section 5 that LLU backhaul belongs to the AISBO market. We have found during the course of our review that the trend for LLU backhaul going forward was heavily focused on AISBO circuits. We therefore consider that it would no longer be appropriate to require BT to offer LLU Backhaul over TI infrastructures, but that, rather, BT's resources would be better spent developing Ethernet backhaul products for LLU to meet current and future demand from LLU operators.
- 8.87 Respondents to the January 2008 consultation broadly agreed with our assessment, and, having considered all the evidence available to us, we consider it is appropriate to confirm our proposals.

Prohibition of undue discrimination

- 8.88 The obligation to provide network access on its own would be insufficient to promote retail competition. Without further regulation, BT would be able to give preferential treatment to its own downstream divisions. In particular, it could engage in price and non-price discrimination practices that could push rivals out of downstream markets, and restrict competition in those markets. We therefore consider the prohibition of undue discriminate is justified to prevent BT from distorting competition by favouring its own retail business.
- 8.89 For the reasons discussed in paragraphs 8.122 to 8.127 in the January 2008 consultation, we consider that we should apply a presumption in the future that saw-tooth discounts are unduly discriminatory.
- 8.90 Given that BT has SMP, a prohibition on undue discrimination is also important to protect the interests of wholesale customers and retail consumers. Without this obligation, there is a risk that BT could abuse its SMP by charging some particular groups of customers excessive charges or offering inadequate quality of service.

Cost orientation

- 8.91 The most obvious way in which BT could abuse its SMP position is through excessively high charges. Some restriction on the level of charges is therefore a natural remedy to consider. This wholesale market is large, with BT's (internal and external) revenue in 2007/08 being over £600m⁸³. As prices at the wholesale level are likely to feed through to the retail market, the potential consumer harm from excessive prices in this market is considerable.
- 8.92 We consider it necessary to protect consumer interests through a cost orientation remedy, which requires BT to set charges on the basis of forward looking long run incremental cost approach, allowing an appropriate mark up for the recovery of common costs.
- 8.93 In addition to the cost orientation obligation, we consider that in principle it is appropriate to impose a charge control. We are consulting on this separately. Even with a charge control, the cost orientation obligation will still be necessary to protect customers because any charge control may be imposed on a basket of services. Without the cost orientation obligation, there is a risk that customers of the some of the services within the basket would be subjected to excessive prices, and that this could feed through into higher retail prices to consumers.

Transparency obligations

- 8.94 We also identified the need for BT to be subject to certain transparency and notification obligations, including obligations relating to requests for new network access. Without such transparency requirements, it would be difficult to detect anti competitive behaviour such as price and non price discrimination. Because of BTs' market power there is a high risk that BT could engage in such behaviour. Ex ante transparency obligations (such as an obligation to give a period of notice before changes prices, terms and conditions) make it easier for other CPs to compete with BT in the retail market on an equal footing. Ofcom therefore considers it appropriate to impose transparency obligations on BT.

Conclusions

- 8.95 Having considered all the responses to the consultations, and reviewed all evidence available to us, we conclude that the proposed remedies on BT as set out in the January 2008 consultation are appropriate. In reaching our decision we have taken account of the considerations set out in paragraphs 8.8 to 8.25 in this Section. The reasons for our conclusion were discussed at paragraphs 8.137 to 8.177 of the January 2008 consultation, and at paragraphs 8.83 to 8.94 above.
- 8.96 Using the powers conferred upon Ofcom under Sections 87 and 88 of the Act, Ofcom has therefore decided to impose the following obligations on BT in the market for low bandwidth TISBO in the UK, excluding the Hull area:
- an obligation to provide Network Access;
 - a requirement not to unduly discriminate;

⁸³ Source: BT Regulatory Financial Statement, 2007/08, <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2008/Regulatoryfinancialstatements2008.htm>

- cost orientation;
 - requirement to publish a reference offer;
 - an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
 - an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
 - a requirement to publish quality of service information;
 - a requirement to notify technical information with 90 days notice; and
 - obligations relating to requests for new network access.
- 8.97 We also consider that BT should in principle be subject to a charge control with respect to the services in this market, the scope and form of which is considered in a separate consultation published alongside this Statement.
- 8.98 In addition, BT will continue to be subject to the PPC Direction, set out in Annex 8, and the requirement to provide RBS Backhaul which is set out at par.73 of the PPC Direction.
- 8.99 With respect to the SLAs/SLGs regime that should apply to services in this market, Ofcom and the OTA have now completed the work referred to in the January 2008 consultation. We set out our decisions in relation to the future SLAs/SLGs regime in paragraph 8.481 and following later in this Section.
- 8.100 With respect to replicability, BT has recently written to inform us that it now considers that the remainder obstacles to replicability identified in the January 2008 consultation have been removed. In the next few months, we will work with BT and industry to assess BT's compliance with the replicability requirements. If this is confirmed, we could be more confident that in the future the regulatory obligations imposed on BT will prove more effective than in the past, in promoting greater competition in the related downstream markets.
- 8.101 With respect to the development of disaggregated access and backhaul products by BT, we consider that BT and industry should continue to engage on how best to meet future requirements for disaggregated products, having also regard for the obligations set in BT's Undertakings. Ofcom will continue to work with industry and BT on this issue, but sees no need at present to mandate particular types of access from BT. However, should we in the future be presented with evidence that BT is not meeting a reasonable demand for disaggregated TDM access and backhaul products, we would consider using our powers to mandate such access as necessary.
- 8.102 In the January 2008 consultation, we also expressed our concern that saw-tooth discounts, which are offered by BT on some products, may act as a barrier to market entry or expansion and, in a market characterised by SMP, may restrict the development of competition. Given their potentially anti-competitive effects, we remain of the view that there should in the future be a presumption that saw-tooth discounts are unduly discriminatory.

8.103 The obligations described above will also apply to interconnection and accommodation services in this market as discussed at paragraph 8.448 and following later in this Section.

8.104 In the remainder of this sub Section, we first set out how we believe the obligations we are imposing on BT meet the legal tests we are required to carry out under the Act. We then set out how we have taken into account the ERG WLL CP in setting what we believe is the appropriate level of obligations on BT in order to promote greater competition in the downstream retail market for low bandwidth TI leased lines.

Communications Act tests

Introduction

8.105 In this Section we set out why we consider the regulatory obligations we are imposing on BT comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on BT, how we believe it meets the relevant tests under Section 47(2) of the Act. Finally, we set out how we believe the cost orientation obligation we are imposing on BT meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

8.106 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. This implements Article 8 of the Access Directive.

8.107 Having considered all responses to the consultation and all evidence available to us, we have concluded that BT shall be subject to the obligations set out at paragraph 8.96 above.

8.108 The reasons we consider these obligations appropriate are set out in paragraphs 8.137 to 8.177 of the January 2008 consultation and at paragraphs 8.83 to 8.94 above. In particular, we believe that these obligations would further the interests of consumers by protecting them from the abuse of SMP and would promote greater competition in the downstream retail market, which, we consider, would also bring benefits to end users by increasing their access to a competitive choice of prices and providers at the retail level.

8.109 Finally, when considering what should be the appropriate remedies, as set out in paragraph 8.8 and following of this Section, we have had regard for our powers under the Act, the Commission's SMP Guidelines, the 2002 Access Guidelines and the ERG WLL CP which identify a range of appropriate remedies that can be imposed when there is a finding of SMP in an electronic communications market and, in the case of the ERG WLL CP, the range of appropriate remedies specifically for wholesale leased lines markets.

Reliance on Competition Law alone not sufficient

- 8.110 Where markets are effectively competitive, ex-post competition law is sufficient to deal with any competition abuse that may arise. However, without the imposition of ex-ante regulations to promote actively the development of competition in a non-effectively competitive market, it is unlikely that ex-post general competition law powers will be sufficient to ensure that effective competition becomes established. Ex-ante powers can be utilised to reduce the level of market power in a market and thereby encourage effective competition to become established.
- 8.111 Generally, the case for ex-ante regulation in communications markets is based on the existence of market failures which, by themselves or in combination, mean that competition might not be able to become established if the regulator relied solely on its ex-post competition law powers established for dealing with more conventional sectors of the economy. Therefore, it is appropriate for ex-ante regulation to be used to address these market failures and entry barriers that might otherwise prevent effective competition from becoming established. By imposing ex-ante regulation that will promote competition, it may be possible to reduce the need for such regulation as markets become more competitive, with greater reliance on ex-post competition law.
- 8.112 The European Commission has stated, in paragraph 3 of Section 3.2 of the Explanatory Memorandum to its Recommendation, that *ex-ante* regulation is justified: "[...] where the compliance requirements of an intervention to redress a market failure are extensive (e.g. the need for detailed accounting for regulatory purposes, assessment of costs, monitoring of terms and conditions including technical parameters etc) or where frequent and/or timely intervention is indispensable, or where creating legal certainty is of paramount concern.[...]."
- 8.113 This is the case for many markets where persistent SMP leads to a risk of a firm setting excessive prices and the need for efficiency incentives, where some form or control over prices would be justified, or where there is likely to be a need for intervention to set detailed terms and conditions for access to networks. We consider that the market for low bandwidth TISBO in the UK is one such market that requires ex ante regulation.
- 8.114 Firstly, the Commission has recently issued its second Recommendation on Relevant Markets for the purpose of reviewing SMP and the imposition of remedies to promote competition⁸⁴. In its Recommendation, the Commission has indicated that one of the markets where ex ante regulation might be warranted is the market for terminating segments of leased lines, which, in the UK, includes the market for low bandwidth TISBO.
- 8.115 Secondly, we have found that, since the last review, BT has increased its market share, including its market share of the retail downstream market, and that it still controls the enduring bottleneck access facilities required to compete in the downstream market. We believe therefore that, in the absence of ex-ante regulation and the presence of BT's enduring SMP significant competition in the downstream market is unlikely to develop unless ex-ante obligations are imposed on BT.

Tests under Section 47(2) of the Act

- 8.116 We set out in detail in the table below why we think each remedy passes the relevant Communications Act tests. In particular, why we believe each obligation we

⁸⁴ See footnote 61 in this Section for a reference.

are imposing on BT meets the tests set out in Section 47(2) of the Act, according to which each obligation must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

Table 8.2: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on BT as a result of it having SMP in the market for low bandwidth TISBO in the UK excluding the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to provide access</i>			
<p>The obligation is objectively justifiable as, in the absence of this condition, BT might refuse to supply low bandwidth TISBO, which would prevent effective competition in the retail market. By ensuring that OCPs can gain access to BT’s wholesale low bandwidth TISBO services on fair and reasonable terms, it will enable OCPs to compete in the retail low bw TI leased lines market. By enabling OCPs to compete fairly with BT, it puts pressure on BT to reduce costs and so promotes efficiency, confers the greatest possible benefits on end-users and promotes effective and sustainable competition.</p>	<p>The obligation does not discriminate unduly as it applies only to operators which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, distort competition by denying access on fair and reasonable terms.</p>	<p>The obligation is proportionate since BT is not required to provide access if the request is unreasonable and because Ofcom does not consider that other operators will install competing facilities to an extent to undermine BT’s SMP. BT is already providing network access, which is therefore clearly feasible. In the absence of Ex-ante regulation, entry barriers and BT’s SMP mean that competition might never become established.</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<p>Although the charge control conditions will, if imposed following our separate consultation, limit average charges, they will not in themselves require BT to supply low bandwidth TISBO.</p>			
<i>Non discrimination</i>			
<p>The requirement is justified because otherwise BT, as a vertically integrated operator, would be able to distort competition by discriminating against its rivals to the benefit of its own (downstream) divisions, e.g. through charging other operators higher prices than it charges BT Retail. It also ensures that BT does not abuse its SMP position by charging excessive prices or offering inadequate quality of service to particular groups of customer and, via the retail market, to end users. The requirement therefore promotes competition and furthers the interests of consumers.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by discriminating against competitors.</p>	<p>The requirement is proportionate in that only discrimination which is unduly is prohibited and because it is the least onerous obligation required to address this particular risk of harm to competition. Ex ante regulation is more effective than ex post competition law where, as here, entry barriers and SMP mean that otherwise, effective competition might never become established.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<i>Cost orientation</i>			
<p>The requirement is justified because, although the charge control conditions will, if imposed following our separate consultation, limit average charges, they do not in themselves control the level of individual charges</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by setting charges which are not based on costs.</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a reasonable return on investment, the cost orientation condition allows BT's charges to be proportionate to the extent of BT's</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<p>within a basket subject to an average charge control. In the absence of this condition, BT might set individual charges at excessively high or anti-competitively low levels within a basket.</p>		<p>investment in the provision of the relevant services. Ex ante regulation is necessary for the reasons set out above.</p>	
<p><i>Transparency obligations</i></p>			
<p>These obligations are justified in that they provide certainty to operators and prevent BT withholding information from customers and competitors, or misusing information in a way which could harm competition. In addition, they facilitate Ofcom's monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.</p>	<p>The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, exploit customers and distort competition by withholding or misusing information.</p>	<p>The obligations are proportionate as the information which BT is obliged to publish is necessary to enable OCPs to make effective use of the network access which BT is also required to provide. The transparency obligations therefore support the other conditions imposed to address BT's SMP in this market. Without this information, OCPs could be unable to compete fairly with BT.</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>

Test under Section 88 of the Act

8.117 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and
- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and conferring the greatest possible benefits on end-users.

8.118 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:

- so fix and maintain some or all of its prices at an excessively high level, or
- so impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.

- 8.119 As discussed in Section 7, where we assessed SMP in this market, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion. In particular, we have identified the risk that BT, given its market power, could engage in price discrimination between its downstream arms and its competitors when granting access to its network. We think therefore that without an obligation to orient prices to costs, BT could, given its scale and scope advantages, afford to price below cost to deter further entry and push competitors out of the market (i.e. margin squeeze). It could also price above cost, which would result in higher prices for end users in retail markets, given the reliance of the market on BTs' wholesale access services. Given that the dominant provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions ex Section 88(3).
- 8.120 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. We set out why we think this condition is appropriate in paragraph 8.164 of the January 2008 consultation, a review of which is provided at paragraph 8.92 of this Section.
- 8.121 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:
- promotes efficiency, by promoting cost based pricing and efficient market entry; and
 - confers the greatest possible benefits on the end-users by ensuring that providers competing for customers in the retail market are not exploited by BT setting unreasonable conditions in the wholesale market.
- 8.122 The cost orientation condition that Ofcom is imposing requires that, unless Ofcom directs otherwise, BT shall set all charges such that they are reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs. If a charge were set below the long run incremental cost of supply, then some customers may buy that product when they would not have been prepared to pay the full long run incremental costs of providing it. This is likely to be inefficient and result in a loss for society as a whole. Moreover, such a low charge is likely to be inconsistent with promoting sustainable wholesale competition, because it could mean that an equally efficient competitor is prevented from entering the market because it is unable to recover its incremental costs. By promoting efficiency and ensuring that competition is not distorted, requiring charges not to be below long run incremental costs will tend to confer the greatest benefits on end users. If a charge were above long run incremental costs plus an appropriate mark up, then it is higher than it needs to be in order to produce the service and this is unlikely to be in consumers' interests. If there were particular circumstances that mean that a charge set on the basis of long run incremental costs plus an appropriate mark up would not be appropriate, and would be detrimental to consumers' interests, then the condition allows Ofcom to direct that the charges are not required to be set on that basis.

Account taken of the ERG Wholesale Leased Lines Common Position

- 8.123 In accordance with ERG's Statement of 12 October 2006⁸⁵, while ERG Common Positions are not binding, ERG members must take the utmost account of them.

⁸⁵ ERG(06)51.

Table 8.3 below summarises how Ofcom has taken into account the ERG Wholesale Leased Lines Common Position in proposing the regulatory remedies for this market.

Table 8.3 Account taken of the ERG Wholesale Leased Lines Common Position

Objective of remedy	Account taken by Ofcom
Assurance of supply	The requirement to provide Network Access on reasonable request should provide competitors with reasonable certainty of ongoing supply of wholesale leased lines in order to give them confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms and conditions in advance should provide clarity of terms and conditions of wholesale leased lines.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and the requirement to publish technical information and the obligation relating to request for new network access should ensure that the technical parameters of access are reasonable. In addition, the obligation to provide certain interconnection services should provide competitors with the ability to interconnect efficiently and economically at a wide range of locations for the purpose of wholesale leased lines interconnection.
Fair and coherent access pricing	The cost orientation obligation and the obligation to comply with charge controls should guarantee competitors that prices for wholesale leased lines is coherent with other services and gives the appropriate incentives for efficient investment decisions to both the SMP operator and its competitors.
Reasonable quality of access products	The proposed revisions of the SLAs/SLGs regime for PPCs should deliver a much improved framework for dealing with the quality of the services provided by BT to its competitors.

Wholesale market for high bandwidth TISBO in the UK excluding the CELA and the Hull area

Introduction

8.124 In this sub Section, we set out the regulatory obligations that we intend to impose on BT as a result of our finding that it has SMP in the provision of high bandwidth TISBOs in the UK excluding the CELA and the Hull area.

8.125 We first set out a summary of our proposals as set out in the January 2008 consultation and July 2008 consultation. Secondly, we review the responses to the consultations, providing our response to the issues raised by respondents. Thirdly, we review the choice of the appropriate remedies, having regard to all responses and all evidence available to us. We then set out our conclusions and the remedies we have decided to impose on BT.

8.126 The last part of this sub Section sets out how we believe our obligations comply with the relevant tests in the Act. In addition, we set out how we have taken into account the ERG WLL CP in setting our obligations.

Summary of proposals

8.127 In paragraphs 7.240 to 7.267 of the January 2008 consultation we set out our proposals in support of the finding of SMP for BT in this market, which we have now confirmed in Section 7. In the table below, we set out the key findings in support of our view.

Table 8.4 Key market power indicators

	Wholesale high bandwidth TISBO market	Downstream retail market
<i>Quantitative indicators</i>		
Market Share	45% (was 44% in the 2003/04 Review ⁸⁶)	33% nationally (was 35% in the 2003/04 Review ⁸⁷)
Profitability	Not available ⁸⁸	Not available
<i>Qualitative indicators</i>		
The ubiquity of BT's infrastructure and the fact that such infrastructure is not easily duplicated		
BT's ability to exploit economies of scale and scope		
The existence of significant barriers to entry and expansion, including as a result of sunk costs		

⁸⁶ As explained at paragraph 7.247 of the January 2008 consultation, the market share from the 2003/04 review are not directly comparable with that set out for this review: in the 2003/04 Review the market definition was different in that it included both 34/45 and 155 Mbit/s circuits, as well as covering the whole of the UK.

⁸⁷ As per previous footnote.

⁸⁸ As set out in paragraph 7.249 of the January 2008 consultation, BT's regulatory financial statement did not allow Ofcom to infer the profitability excluding the revenues and costs from the London area. Paragraph 7.249 and following provide a more in depth discussion of why we decided not to place much emphasis on profitability.

8.128 In paragraphs 8.180 to 8.207 of the January 2008 consultation we then reviewed the regulatory options available to us, identified which option we believed would most appropriately serve our policy objectives, and which remedies, if any, should apply to BT in relation to its proposed SMP determination in the provision of high bandwidth TISBO in the UK excluding the CELA and the Hull area. We present a summary of that assessment in the following paragraphs.

Options assessment

8.129 Before setting out our analysis of appropriate remedies, we considered our broader policy options and how best we could meet our policy objectives considering BT's SMP finding. As set out in paragraphs 8.33 to 8.37 of the January 2008 consultation, our policy objectives included protecting the interests of consumers and promoting competition. We considered two main policy options, namely keeping the existing regulation or varying it to address the shortcoming we had identified, against the counterfactual of not imposing any regulation at all.

8.130 In particular, in the January 2008 consultation, we considered the following regulatory options:

- *No regulation;*
- *Status quo*, which means to continue to regulate BT's provision of high bandwidth TISBO, with the same SMP Conditions as set out in the 2003/04 Review; and
- *Variations and additional measures*, such as reviewing the SLA/SLGs regime and seeking a commitment from BT to consult on the introduction of more efficiently designed SDH access and backhaul products.

8.131 For each option, we considered how well it would serve our policy objectives, how it would affect the development of competition in downstream retail markets, and the impact it would have on the various key stakeholders, including BT.

8.132 Firstly, in paragraphs 7.240 to 7.267 of the January 2008 consultation we set out why we proposed to find that BT had SMP in this market. This has now been confirmed in Section 7 of this statement. BT's market share in this market was found to be 45%. In our view, its market power is, *inter alia*, derived from its control of ubiquitous infrastructures which cannot be readily duplicated by competitors, given the importance of sunk costs and presence of economies of scale and scope. In paragraphs 8.180 to 8.207 of the January 2008 consultation we set out why we believed that other providers would require regulated access from BT to be able to compete effectively in downstream retail leased lines markets. In the absence of regulation, we argued, BT would be able to leverage its market power into the downstream market, thus reducing end users access to a choice of competitive services and prices.

8.133 Having had regard to the Commission's SMP Guidelines⁸⁹ and our finding of SMP, we considered therefore that the option of no regulation would poorly serve our objectives and, in particular, the promotion of competition in the downstream market for the benefit of end users.

⁸⁹ The EC SMP Guidelines state at paragraph 16 that "...ex ante regulation should be imposed to ensure that an SMP provider cannot use its market power to restrict or distort competition..".

- 8.134 However, in the course of our review, we have found that the current regime has had some success in promoting competition in this market. Firstly, after reviewing the evidence available to us on a geographic basis, we proposed that BT no longer has SMP in the CELA for these services. Secondly, we also found that the estimated retail market share of BT in this market appears to be lower than that found in the 2003/04 Review.
- 8.135 For the same reasons discussed in relation to low bandwidth TISBO services earlier in this Section, it had emerged in the course of our review that the current regime, while having had some success in promoting competition in this market, had some shortcomings that need to be addressed.
- 8.136 In particular, we identified problems with the SLAs/SLGs regime and the lack of availability of disaggregated TI access and backhaul products from BT. These problems were common across all TISBO bandwidths provided by BT, including the 34/45 Mbit/s TISBO products reviewed in this market. The discussion of these issues was provided at paragraphs 8.120 to 8.121 and 8.130 to 8.132 of the January 2008 consultation in relation to the market for low bandwidth TISBO. A summary of that discussion has been provided at paragraphs 8.53 and following of this Section.

Conclusion on choice of option

- 8.137 Our preliminary conclusion was therefore that some changes were required to the current regime if it was to continue to promote competition in the future.
- 8.138 We considered that the option of keeping the current framework unaltered would not therefore serve well our policy objectives, and in particular the promotion of competition in downstream markets to the benefits of end users. Further, we suggested that we should adopt the following variations and additional measures:
- review the SLAs/SLGs regime; and
 - seek a commitment from BT to consult on the launch of disaggregated SDH products that would represent a future EoI input for SDH leased lines.
- 8.139 Finally, at paragraph 8.189 of the January 2008 consultation we considered the impact on stakeholders of the different options. We concluded that the option of varying the existing regime with the proposed amendments had the greatest benefits, as it would best achieve the promotion of competition, and would set the basis for future lower prices and better quality services for end users.
- 8.140 We therefore concluded that the option to adopt the suggested variations and additional measures to the existing regulatory regime best met our policy objectives and should form the basis for proposing regulatory obligations on BT in the market for high bandwidth TISBO in the UK excluding the CELA and the Hull area.

Preliminary conclusions: proposed regulatory obligations

- 8.141 In the January 2008 consultation we set out in paragraphs 8.192 to 8.206 why we thought it is appropriate to impose on BT certain obligations relating to the provision of network access at regulated terms and conditions, including prices. We proposed the following obligations should apply to BT:
- an obligation to provide Network Access;

- a requirement not to unduly discriminate;
- cost orientation;
- a requirement to publish a reference offer;
- an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
- an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
- a requirement to publish quality of service information;
- a requirement to notify technical information with 90 days notice; and
- obligations relating to requests for new network access.

8.142 In addition, we considered that Ofcom should consider further the imposition of charge controls, including a review of the charge controls going forward after the current one were set to expire in September 2008. We stated our intention to consult separately on it.

8.143 With respect to the types of access BT should provide, we considered that BT should continue to be subject to the PPC Direction. However, we proposed lifting the LLU Backhaul requirement currently imposed on BT. The arguments which support our conclusions have been set out at paragraph 8.61 and following in this Section in relation to the low bandwidth TISBO market, and equally apply to this market.

8.144 With respect to the SLAs/SLGs regime, we proposed amending the current PPC Direction to reflect the work that is being done by the OTA and industry on KPIs and, once Ofcom's work on Ethernet SLAs/SLGs has been completed, aligning the SLGs for PPCs with those for Ethernet products.

8.145 We also proposed to continue to engage with BT to ensure that any reasonable request for disaggregated access and backhaul products is properly considered, and that such new services are promptly developed.

8.146 In paragraph 8.207 of the January 2008 consultation, we indicated how we thought the proposed remedies met the Communications Act tests. We have set out at the end of this sub Section the appropriate Communications Act tests for each of the regulatory obligations we have concluded will apply to BT.

Responses to the consultations and Ofcom's response

Charge controls

8.147 Several respondents have commented on the proposal to further consider the opportunity to re-impose charge controls on, among other services, wholesale high bandwidth TISBO in the UK excluding the CELA and the Hull area.

8.148 Having considered these responses, we remain of the view that charge controls should be applied to the services provided by BT in this market, given BT's dominant position and the fact that the market is not prospectively competitive. In the absence of a charge control, we consider there is a significant risk that BT could increase its

charges above competitive levels, and that this could lead to higher prices in retail markets, to the detriment of consumers.

- 8.149 We have set out a summary of all the comments received in relation to charge controls on wholesale TISBO markets, as well as Ofcom's response to them, at paragraphs 8.67 to 8.73.

Deregulation within CELA

- 8.150 Several respondents were concerned that deregulation within the CELA would cause BT to withdraw the provision of services within the area.
- 8.151 In Section 7, we have confirmed the finding of no SMP in the CELA. Having regard to the evidence available to us, and to the Commission SMP Guidelines⁹⁰, it is not appropriate for Ofcom to consider remedies on BT or any other undertaking in this area. Whilst it is possible that BT might withdraw its 34/45 Mbit/s PPCs in the CELA, we do not consider it likely. It would not be in BT's interests to withdraw services in this market: as a commercial entity, it has an incentive to maximise its sales and profits from products and services, and we believe this is also the case for the 34/45 Mbit/s PPCs it provides in the CELA. BT has agreed to give a commitment that it will continue to provide these services in the CELA for a minimum period of 6 months after the publication of this Statement. This commitment is reproduced in Annex 9. Nevertheless it is a commercial decision for BT whether to supply services to third parties in a market in which they have been found not to have SMP. The finding of no SMP suggests that even if BT did withdraw services, the level of competition in the CELA (as evidence in Sections 6 and 7) is such that BT will be sufficiently constrained and there will be choice for end-users that further regulation is no longer necessary.

Review of proposals for remedies

- 8.152 In the following paragraphs, we review our proposals for remedies having regard to all the responses and representations received and the evidence available to us following the consultations of January and July 2008. These proposals were set out in full at paragraphs 8.192 to 8.207 of the January 2008 consultation, and a summary has been provided in paragraphs 8.141 to 8.146 above.
- 8.153 We then complete our review for this market by setting out our final decisions on the regulatory obligations that should apply to BT as a result of our finding of SMP. Finally, we set out why we believe the Communications Act tests are met, including why ex ante regulation is appropriate and reliance on competition law alone would be insufficient.

Aims of regulation

- 8.154 We set out our policy objectives in paragraphs 8.33 to 8.37 of the January 2008 consultation. Given we have found in Section 7 that BT has SMP in this market, we consider that regulation should have the following aims in this market:
- to protect wholesale customers and, via the retail market, consumers from the exploitation of that SMP, for example by protecting them from excessive or discriminatory pricing; and

⁹⁰ Paragraphs 113 of the Commission SMP Guidelines explicitly forbid the imposition of remedies in markets where an NRA has found to be effective competition.

- to promote competition in the retail market by ensuring that SMP in this wholesale market is not leveraged into the retail market.

8.155 As discussed further below, there is an additional consideration in this market. While we consider that BT will retain SMP for the period covered by this review, it is possible, though not necessarily likely, that conditions may change in the longer term. For example, it is possible that the market may fragment further geographically, with effective competition in metropolitan areas other than the CELA. Given this possibility, we have a third aim for regulation in this market:

- to promote competition in this wholesale market.

8.156 For markets where there is some likelihood that effective and sustainable competition will develop in the longer term, there are additional considerations in deciding which remedies are in consumers' interests. There can sometimes be tension between, on the one hand, protecting consumers from the abuse of SMP in the short term and promoting competition in the retail market and, on the other hand, promoting competition in the wholesale market. However, for the reasons given below, we do not consider that any conflict arises in this case.

Network Access

8.157 BT has SMP in this market. Without an obligation to provide wholesale services to rival CPs, including interconnection services, BT is likely to have an incentive to refuse to provide access and thereby leverage its market power into the downstream retail market. In order to meet the objective of promoting competition in the retail market, an obligation to provide network access is required as well as an obligation to provide interconnection services. As discussed further in the later sub Section on the Communications Act tests, ex ante regulation is likely to be more effective in promoting competition in the downstream retail market than ex post competition law.

8.158 We consider that access obligations are, on balance, also likely to help the promotion of wholesale competition in this market. Access obligations can have a detrimental effect on wholesale competition because they may reduce the incentive to build new infrastructure, because it may be cheaper to use regulated access from BT if BT has advantages in terms of economies of scale and scope. However, access obligations can also have a positive impact on wholesale competition, in that they allow CPs to build their infrastructure gradually. In particular, it allows them to connect two locations where it is cost effective to build infrastructure to one location, but where the other location is situated in an area where only BT has network infrastructure. Without an obligation on BT to provide access on reasonable terms, BT is likely to have an incentive not to provide access. We consider that such action would make it more difficult for competition to develop at the wholesale level. Similar arguments apply to the no undue discrimination remedy and transparency obligations. Without these remedies we believe that infrastructure competition at the wholesale level would be less likely to develop. As we consider that infrastructure competition is likely to have significant long term benefits to consumers, we believe that these remedies are in consumers' interests.

8.159 We set out our considerations on network access in paragraphs 8.192 to 8.195 of the January 2008 consultation, including why we considered BT should continue to provide PPCs. Respondents broadly agreed with our assessment, and, having considered all evidence available to us, we consider it is appropriate to confirm our proposals.

Prohibition of undue discrimination

- 8.160 The obligation to provide network access on its own would be insufficient to promote retail competition. Without further regulation, BT would be able to give preferential treatment to its own downstream divisions. In particular, it could engage in price and non-price discrimination practices that could push rivals out of the downstream market, and restrict competition in the downstream market. We therefore consider the prohibition of undue discriminate is justified to prevent BT from distorting competition by favouring its own retail business.
- 8.161 Given that BT has SMP, a prohibition of undue discrimination is also important to protect the interests of all wholesale customers and, via the retail market, all consumers. Without this obligation, there is a danger that BT could abuse its SMP by charging some particular groups of customers excessive charges or offering inadequate quality of service.

Cost orientation

- 8.162 The most obvious way in which BT could abuse its SMP position is through excessively high charges. Some restriction on the level of charges is therefore a natural remedy to consider. This wholesale market is fairly large, with BT's (internal and external) revenue in 2007/08 being around £60m⁹¹. As wholesale prices are likely to feed through to the retail market, the potential consumer harm from excessive prices in this market is considerable.
- 8.163 It might be argued that a cost orientation remedy will limit the attractiveness of building infrastructure, and that this may therefore operate against consumers' long term interests. However, we need to balance promoting infrastructure competition for the future with protecting consumers from exploitation of SMP in the next four year period. We note that competition has developed in the CELA despite there being a cost orientation and charge control obligations. We consider that this demonstrates that for the provision of these high bandwidth TISBO services it is possible to protect consumers from excessive prices without inhibiting the development of infrastructure competition. We therefore consider that to protect consumers' interests, it is necessary to impose a cost orientation remedy, which requires BT to set charges based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs.
- 8.164 In addition to the cost orientation obligation, we consider that in principle it is appropriate to impose a charge control. We are consulting on this separately. Even if a charge control were imposed, the cost orientation obligation will still be necessary to protect customers because any charge control may be imposed on a basket of services. Without the cost orientation obligation, there is a risk that customers of the some of the components of any such basket would be subjected to excessive prices, which would be expected to feed, via the retail market, to higher prices to consumers.
- 8.165 Without a cost orientation obligation, the risk is not just of excessive prices. BT could, given its scale and scope advantages, afford to price below cost to deter entry into this wholesale market.

⁹¹ Source: BT Regulatory Financial Statement 2007/08, Source: BT Regulatory Financial Statement, 2007/08, <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2008/Regulatoryfinancialstatements2008.htm>

Transparency obligations

8.166 We also identified the need for BT to be subject to certain transparency and notification obligations, including obligations relating to requests for new network access. Without such transparency requirements, it would be difficult to detect anti competitive behaviour such as price and non price discrimination. Because of BT's market power there is a high risk that BT could engage in such behaviour. Ex ante transparency obligations (such as an obligation to give a period of notice before changes prices, terms and conditions) make it easier for other CPs to compete with BT in the retail market on an equal footing. Ofcom therefore considers it appropriate to impose transparency obligations on BT.

Conclusions

8.167 Having considered the responses to the consultations and all the available evidence, we conclude that the remedies proposed in the January 2008 consultation are appropriate. In reaching our decision we have taken account of the considerations described in paragraphs 8.8 to 8.25 in this Section. The reasons for our conclusion were discussed at paragraphs 8.137 to 8.177 of the January 2008 consultation and at paragraphs 8.152 to 8.166 above.

8.168 Using the powers conferred upon Ofcom under Sections 87 and 88 of the Act, Ofcom has therefore decided to impose the following obligations on BT in the market for high bandwidth TISBO in the UK, excluding the CELA and the Hull area:

- an obligation to provide Network Access;
- a requirement not to unduly discriminate;
- cost orientation;
- a requirement to publish a reference offer;
- an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
- an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
- a requirement to publish quality of service information;
- a requirement to notify technical information with 90 days notice; and
- obligations relating to requests for new network access.

8.169 We also consider that BT should in principle be subject to a charge control with respect to the services in this market, the scope and form of which is considered in a separate consultation published alongside this Statement.

8.170 In addition, BT will continue to be subject to the PPC Direction, which is set out in detail in Annex 8 to this Statement.

8.171 With respect to the SLAs/SLGs regime that should apply to services in this market, Ofcom and the OTA have now completed the work referred to in the January 2008

consultation. We set out our decisions in relation to the future SLAs/SLGs regime in paragraph 8.481 and following later in this Section.

- 8.172 With respect to the development of disaggregated access and backhaul products by BT, we consider that BT and industry should continue to engage in how best to meet future requirements for disaggregated products, having regard for the obligations set out in BT's Undertakings. Ofcom will continue to work with industry and BT on this issue, but sees no need at present to mandate particular types of access from BT. However, should we in the future be presented with evidence that BT is not meeting a reasonable demand for disaggregated TDM access and backhaul products, we would consider using our powers to mandate such access as necessary.
- 8.173 The obligations above will also apply to interconnection and accommodation services in this market as discussed at paragraph 8.448 and following later in this Section.
- 8.174 In the remainder of this sub Section, we first set out how we believe the obligations we are imposing on BT meet the legal tests we are required to apply under the Act. We then set out how we have taken into account the ERG Wholesale Leased Lines Common Position on remedies in setting what we believe is the appropriate level of obligations on BT in order to promote greater competition in the downstream retail market for low bandwidth TI leased lines.

Communications Act tests

Introduction

- 8.175 It is our view that the regulatory obligations we are imposing on BT comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on BT, how we believe it meets the appropriate legal tests under Section 47(2) of the Act. Finally, We set out how we believe the cost orientation obligation we are imposing on BT meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

- 8.176 When assessing the appropriate remedies, we had regard to the fact that, broadly, the competition problems identified in relation to other wholesale leased lines markets in this review where BT has been found to have SMP. We therefore considered appropriate to impose a broadly similar set of remedies, with a broadly similar set of supporting arguments. We therefore do not restate those arguments here, but refer to the discussion and arguments reviewed at paragraph 8.157 and following in this Section.

Reliance on Competition Law alone not sufficient

- 8.177 Similarly, the arguments in support of the view that reliance of Competition Law alone would not suffice are the same as those that apply to the other markets in this review, including that of low bandwidth TISBO. We therefore refer to the discussion at paragraph 8.110 in this Section for the arguments in support of our view.

Tests under Section 47(2) of the Act

8.178 We set out in details in the table below how we think each remedy passes the relevant Communications Act tests. In particular, how we believe each obligation we are imposing on BT meets the tests set out in Section 47(2) of the Act, according to which each obligation must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

Table 8.5: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on BT as a result of it having SMP in the market for high bandwidth TISBO in the UK excluding the CELA and the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to provide access</i>			
<p>The obligation is objectively justifiable as, in the absence of this condition, BT might refuse to supply high bandwidth TISBO, which would prevent effective competition in the retail market. By ensuring that OCPs can gain access to BT’s wholesale high bandwidth TISBO services on fair and reasonable terms, it will enable OCPs to compete in the retail high bandwidth T1 leased lines market. By enabling OCPs to compete fairly with BT, it puts pressure on BT to reduce costs and so promotes efficiency, confers</p>	<p>The obligation does not discriminate unduly as it applies only to operators which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, distort competition by denying access on fair and reasonable terms.</p>	<p>The obligation is proportionate since BT is not required to provide access if the request is unreasonable and because Ofcom does not consider that other operators will install competing facilities to an extent to undermine BT’s SMP. BT is already providing network access, which is therefore clearly feasible. In the absence of Ex-ante regulation, entry barriers and BT’s SMP mean that competition might never become established.</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<p>the greatest possible benefits on end-users and promotes effective and sustainable competition. Although the charge control conditions will, if imposed following our separate consultation, limit average charges, they will not in themselves require BT to supply high bandwidth TISBO.</p>			
<p><i>Non discrimination</i></p>			
<p>The requirement is justified because otherwise BT, as a vertically integrated operator, would be able to distort competition by discriminating against its rivals to the benefit of its own (downstream) divisions, e.g. through charging other operators higher prices than it charges BT Retail. It also ensures that BT does not abuse its SMP position by charging excessive prices or offering inadequate quality of service to particular groups of customer and, via the retail market, to end users. The requirement therefore promotes competition and furthers the interests of consumers.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by discriminating against competitors.</p>	<p>The requirement is proportionate in that only discrimination which is unduly is prohibited and because it is the least onerous obligation required to address this particular risk of harm to competition. Ex ante regulation is more effective than ex post competition law where, as here, entry barriers and SMP mean that otherwise, effective competition might never become established.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<p><i>Cost orientation</i></p>			
<p>The requirement is justified because, although the charge control conditions will, if imposed following our separate</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the</p>

<p>consultation, limit average charges, they do not in themselves control the level of individual charges within a basket subject to an average charge control. In the absence of this condition, BT might set individual charges at excessively high or anti-competitively low levels within a basket.</p>	<p>have an incentive to, distort competition by setting charges which are not based on costs.</p>	<p>reasonable return on investment, the cost orientation condition allows BT's charges to be proportionate to the extent of BT's investment in the provision of the relevant services. Ex ante regulation is necessary for the reasons set out above.</p>	<p>obligation and the reasons for imposing it are clearly explained in this document.</p>
<p><i>Transparency obligations</i></p>			
<p>These obligations are justified in that they provide certainty to operators and prevent BT withholding information from customers and competitors, or misusing information in a way which could harm competition. In addition, they facilitate Ofcom's monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.</p>	<p>The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, exploit customers and distort competition by withholding or misusing information.</p>	<p>The obligations are proportionate as the information which BT is obliged to publish is necessary to enable OCPs to make effective use of the network access which BT is also required to provide. The transparency obligations therefore support the other conditions imposed to address BT's SMP in this market. Without this information, OCPs could be unable to compete fairly with BT.</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>

Test under Section 88 of the Act

8.179 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and
- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and conferring the greatest possible benefits on end-users.

8.180 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:

- so fix and maintain some or all of its prices at an excessively high level, or
- so impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.

8.181 As discussed in Section 7, where we assessed SMP in this market, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion. In particular, we have identified the risk that BT, given its market power, could engage in price discrimination between its downstream arms and its competitors when granting access to its network. We think therefore that without an obligation to orient prices to costs, BT could, given its scale and scope advantages, afford to price below cost to deter further entry and push competitors out of the (downstream) market (i.e. margin squeeze). It could also price above cost, which would result in higher prices for end users in retail markets, given the reliance of the market on BTs' wholesale access services. Given that the dominant provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions ex Section 88(3).

8.182 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. We set out why we think these conditions are appropriate in paragraph 8.192 to 8.205 of the January 2008 consultation, a review of which is provided at paragraph 8.162 of this Section.

8.183 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:

- promotes efficiency, by promoting cost based pricing and efficient market entry; and
- confers the greatest possible benefits on the end-users by ensuring that providers competing for customers in the retail market are not exploited by BT setting unreasonable conditions in the wholesale market.

8.184 The cost orientation condition that Ofcom is imposing requires that, unless Ofcom directs otherwise, BT shall set all charges such that they are reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs. If a charge were set below the long run incremental cost of supply, then some customers may buy that product when they would not have been prepared to pay the full long run incremental costs of providing it. This is likely to be inefficient and result in a loss for society as a whole. Moreover, such a low charge is likely to be inconsistent with promoting sustainable wholesale competition, because it could mean that an equally efficient competitor is prevented from entering the market because it is unable to recover its incremental costs. By promoting efficiency and ensuring that competition is not distorted, requiring charges not to be below long run incremental costs will tend to confer the greatest benefits on end users. If a charge were above long run incremental costs plus an appropriate mark up, then it is higher than it needs to be in order to produce the service and this is unlikely to be in consumers' interests. If there were particular circumstances that mean that a charge set on the basis of long run incremental costs plus an appropriate mark up would not be appropriate, and would be detrimental to consumers' interests, then the condition allows Ofcom to direct that the charges are not required to be set on that basis.

Account taken of the ERG Wholesale Leased Lines Common Position

8.185 In accordance with ERG's Statement of 12 October 2006⁹², while ERG Common Positions are not binding, ERG members must take the utmost account of them. Table 8.6 below summarises how Ofcom has taken into account the ERG WLL CP in proposing the regulatory remedies for this market.

Table 8.6 Account taken of the ERG Wholesale Leased Lines Common Position

Objective of remedy	Account taken by Ofcom
Assurance of supply	The requirement to provide Network Access on reasonable request should provide competitors with reasonable certainty of ongoing supply of wholesale leased lines in order to give them confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms and conditions in advance should provide clarity of terms and conditions of wholesale leased lines.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and the requirement to publish technical information and the obligation relating to request for new network access should ensure that the technical parameters of access are reasonable. In addition, the obligation to provide certain interconnection services should provide competitors with the ability to interconnect efficiently and economically at a wide range of locations for the purpose of wholesale leased lines interconnection.
Fair and coherent access pricing	The cost orientation obligation and the obligation to comply with charge controls should guarantee competitors that prices for wholesale leased lines is coherent with other services and gives the appropriate incentives for efficient investment decisions to both the SMP operator and its competitors.
Reasonable quality of access products	The proposed revisions of the SLAs/SLGs regime for PPCs should deliver a much improved framework for dealing with the quality of the services provided by BT to its competitors.

⁹² ERG(06)51.

Wholesale market for very high bandwidth 155 Mbit/s TISBO in the UK excluding the CELA and the Hull area

Introduction

- 8.186 In this sub Section, we set out the regulatory obligations that we intend to impose on BT as a result of our finding that BT has SMP in the provision of very high bandwidth 155 Mbit/s TISBO in the UK excluding the CELA and the Hull area.
- 8.187 In the January 2008 consultation, we proposed to deregulate BT's provision of 155 Mbit/s TISBO in the UK excluding the Hull area, following a proposed finding of no SMP. Following respondents comments to the January 2008 consultation, we reviewed our proposals for market definition, SMP assessment and remedies in relation to the provision of wholesale very high bandwidth 155 Mbit/s TISBO in the UK. In particular, we proposed in the July 2008 consultation that BT had SMP in the provision of wholesale very high bandwidth 155 Mbit/s TISBO in the UK excluding the CELA and the Hull area.
- 8.188 Below, we first set out a summary of the proposals as set out in the July 2008 consultation, which include a summary of the assessment of the appropriate policy options and remedies. Secondly, we review the responses to the consultations, providing our response to the issues raised by respondents. Thirdly, we review the choice of the appropriate remedies, having regard to all the responses and evidence available to us. We then set out our conclusions and the remedies we have decided to impose on BT.
- 8.189 The last part of this sub Section sets out how we believe our obligations comply with the relevant tests in the Act. In addition, we set out how we have taken into account the ERG WLL CP in setting our obligations.

Summary of proposals

- 8.190 In paragraphs 5.22 to 5.52 of the July 2008 consultation we set out our proposals in support of the finding of SMP for BT in this market. In the table below, we set out the key findings in support of our view.

Table 8.7 Key market power indicators

Wholesale very high bandwidth 155 Mbit/s TISBO market	
<i>Quantitative indicators</i>	
Market Share	46-56%
<i>Qualitative indicators</i>	
The extensiveness of BT's infrastructure and the fact that such infrastructure is not easily duplicated	
BT's ability to exploit economies of scale and scope	
The existence of significant barriers to entry and expansion, including as a result of sunk costs	

- 8.191 In paragraphs 6.27 to 6.69 of the July 2008 consultation we then reviewed the regulatory options available to us, identified which option we believed would most appropriately serve our policy objectives, and which remedies, if any, should apply to BT in relation to its proposed SMP determination in the provision of very high

bandwidth 155 Mbit/s TISBOs. We present a summary of that assessment in the following paragraphs.

Options assessment

- 8.192 Before setting out our analysis of appropriate remedies, we considered our broader policy options and how best we could meet our policy objectives considering BT's SMP finding. We considered two main policy options, namely keeping the existing regulation or varying it to address the shortcoming we had identified, against the counterfactual of not imposing any regulation at all.
- 8.193 In particular, in the July 2008 consultation, we considered the following regulatory options:
- *No regulation;*
 - *Status quo*, which means to continue to regulate BT's provision of very high bandwidth 155 Mbit/s TISBOs, with the same SMP Conditions as set out in the 2003/04 Review; and
 - *Variations and additional measures*, in particular reviewing the SLA/SLGs regime and applying an amended interpretation of the no undue discrimination obligation, under which we would presume that saw-tooth discounts are unduly discriminatory.
- 8.194 For each option, we considered how well it would serve our policy objectives, how it would affect the development of competition in downstream retail markets, and the impact it would have on the various key stakeholders, including BT.
- 8.195 Firstly, in paragraphs 5.22 to 5.52 of the July 2008 consultation we set out the arguments for and our proposals in support of the finding of SMP for BT in this market. BT's market share in this market was found to be 56%. In our view, its market power is, *inter alia*, derived from its control of ubiquitous infrastructures, which cannot be readily duplicated by competitors, given the importance of sunk costs and presence of economies of scale and scope. We set out why we believed that other providers would require regulated access from BT to be able to compete effectively in downstream retail leased lines markets. In the absence of regulation, we argued, BT would be able to further exploit its market power by restricting access to its network and leveraging its market power into the downstream market, thus reducing end users access to a choice of competitive services and prices. We considered therefore that the option of no regulation would poorly serve our objectives and, in particular, the promotion of competition in downstream markets for the benefit of end users.
- 8.196 We then considered the current obligations (*status quo*) and the way they have worked in order to verify if changes would be required to the current set of obligations to ensure that they do promote greater competition in the future.
- 8.197 In particular, we discussed in paragraph 6.34 to 6.43 how some of the problems identified with the current regime in relation to low and high bandwidth TISBO, namely the shortcomings of the SLAs/SLGs regime and the potentially anti competitive effect of saw tooth discounts, were also relevant for the very high bandwidth 155 Mbit/s TISBO market. We have provided a summary of the relevant discussions at, respectively, paragraphs 8.53 and 8.55 of this Section.

- 8.198 Our preliminary conclusion was that the current regime required some changes if it was to promote greater competition in the downstream retail market in the future. We therefore considered that the option of keeping the current framework unaltered would not serve well our policy objectives, and in particular the promotion of competition in downstream markets to the benefits of end users.
- 8.199 The obligations imposed on BT, however, had promoted some level of competition. In particular, we found that competitive conditions for the provisions of wholesale very high bandwidth 155 Mbit/s TISBOs exist in the CELA. However, such competitive conditions were not found elsewhere in the UK (excluding Hull), where BT remains the main provider of these services. Without regulated access to BT's network, it was argued, competition could be restricted or distorted, and end users could suffer through not having access to a choice of competitive offerings and prices.
- 8.200 We therefore continued to believe that BT should be subject to SMP conditions relating to the provision of regulated access in relation to very high bandwidth 155 Mbit/s TISBO in the UK excluding the CELA and the Hull area. In addition, we suggested that we should adopt the following variations and additional measures:
- review the SLAs/SLGs regime; and
 - clarify our interpretation of undue discrimination as comprising saw tooth discounts.
- 8.201 Finally, at paragraph 6.69 of the July 2008 consultation we considered the impact on stakeholders of the different options. We concluded that the option of varying the existing regime with the proposed amendments had the greatest benefits, as it would best achieve the promotion of competition, and would set the basis for future lower prices and better quality services for end users.
- 8.202 We therefore concluded that adopting the suggested variations and additional measures would best meet our policy objectives and should form the basis for proposing regulatory obligations on BT.

Preliminary conclusions: proposed regulatory obligations

- 8.203 In the July 2008 consultation we set out in paragraphs 6.49 to 6.64 why we thought it would be appropriate to impose on BT certain obligations relating to the provision of network access at regulated terms and conditions, including prices. The obligations we proposed should apply to BT were:
- Provision of fair and reasonable Network Access;
 - Obligations not to unduly discriminate, (in this respect we proposed that we would consider in the future that saw-tooth discounts might be unduly discriminatory);
 - Cost orientation obligation; and
 - Maintaining the transparency and notification obligations currently applying to BT in this market.
- 8.204 In addition, we proposed that Ofcom should consider further the imposition of charge controls and indicated that we would consult separately on it.

- 8.205 With respect to the types of access BT should provide, we considered that BT should continue to be subject to the PPC Direction but that we should lift the LLU Backhaul requirement currently imposed on BT. The arguments in support of our conclusion are the same as those discussed in relation to the market for low bandwidth TISBO in the UK as set at paragraph 8.143 and following of this Section.
- 8.206 With respect to the SLAs/SLGs regime, we proposed amending the current PPC Direction to reflect the work that is being done by the OTA and industry on KPIs and, once Ofcom's work on Ethernet SLAs/SLGs has been completed, aligning the SLGs for PPCs with those for Ethernet products.
- 8.207 We then proposed to continue to engage with BT to ensure that any reasonable request for disaggregated access and backhaul products is properly considered, and that such new services are promptly developed.
- 8.208 Finally, we set out our view that there should in the future be a presumption that saw-tooth discounts are unduly discriminatory, and therefore in breach of an SMP requirement not to discriminate unduly.
- 8.209 Paragraph 6.69 of the July 2008 consultation set out how we thought the proposed remedies met the Communications Act tests. We have set out in detail at the end of this sub Section the appropriate Communications Act tests for each of the regulatory obligations we have concluded will apply to BT.

Responses to the July 2008 consultation and Ofcom's response

- 8.210 In general most stakeholders agreed with us that the current regime should be amended if it is to serve well the interests of end users by promoting competition, and that the variations we had identified were broadly appropriate.
- 8.211 However, BT argued that the imposition of charge controls on these services would be disproportionate. Another respondent argued that in markets that are prospectively competitive we should not impose charge controls.
- 8.212 Having considered these responses, we remain of the view charge controls should be applied to the services provided by BT in this market, given BT's dominant position and the fact that we consider the market not to be prospectively competitive. In the absence of a charge control, we consider there is a significant risk that BT could increase its charges above competitive levels, and that this could lead to higher prices in retail markets, to the detriment of consumers. We accept that there is a possibility that lower prices may deter some infrastructure investment by competing operators. However, we consider the likelihood of this occurring to be low, given the declining nature of the TISBO market. In addition, such investments may be inefficient, if they are prompted solely by prices being above competitive levels.

Review of proposals for remedies

- 8.213 We have reviewed our proposals for remedies having regard to all responses and representations received and all evidence available to us following the consultations of January and July 2008. These proposals were set out in full at paragraphs 6.49 to 6.68 of the July 2008 consultation, and a summary has been provided at paragraphs 8.203 to 8.209 above.
- 8.214 We consider that the regulatory objectives and analysis of the appropriate regulatory obligations for this market are broadly the same as for the high bandwidth TISBO

market in the UK excluding the CELA and the Hull area, as described in paragraphs 8.154 to 8.166 above. This market is fairly large, with BT's (internal and external) revenues of around £100m in 2007/08⁹³ for the whole of the UK, with the large majority of these likely to be outside the CELA. Given the size of the market and BT's SMP position, there is scope for significant consumer harm if BT were not regulated. For the same reasons as for the high bandwidth TISBO market in the UK excluding the CELA and the Hull area, we consider it appropriate to impose a broadly similar set of remedies.

Conclusions

- 8.215 Having considered all responses to the consultations, and having reviewed all evidence available to us, we conclude that the most appropriate remedies are as set out in the July 2008 consultation. In reaching our decision we have taken account of the considerations described in paragraphs 8.8 to 8.25 above. The reasons for our conclusion were discussed at paragraphs 8.137 to 8.177 of the January 2008 consultation and in the paragraphs immediately above.
- 8.216 Using the powers conferred upon Ofcom under Sections 87 and 88 of the Act, Ofcom has therefore decided to impose the following obligations on BT in the market for the very high bandwidth 155 Mbit/s TISBO in the UK excluding the CELA and the Hull area:
- an obligation to provide Network Access;
 - a requirement not to unduly discriminate;
 - cost orientation;
 - a requirement to publish a reference offer;
 - an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
 - an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
 - a requirement to publish quality of service information;
 - a requirement to notify technical information with 90 days notice; and
 - obligations relating to requests for new network access.
- 8.217 We also consider that BT should in principle be subject to a charge control with respect to the services in this market, the scope and form of which is considered in a separate consultation published alongside this Statement.
- 8.218 In addition, BT will continue to be subject to the PPC Direction. This is set out in detail in Annex 8 to this Statement.

⁹³ Source: BT Regulatory financial Statement 2007/08, <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2008/Regulatoryfinancialstatements2008.htm>

- 8.219 With respect to the SLAs/SLGs regime that should apply to services in this market, Ofcom and the OTA have now completed the work referred to in the January 2008 consultation. We set out our decisions in relation to the future SLAs/SLGs regime in paragraph 8.481 and following later in this Section.
- 8.220 With respect to the development of disaggregated access and backhaul products by BT, we consider that BT and industry should continue to engage in how best to meet future requirements for disaggregated products, having regard to the obligations set in BT's Undertakings. Ofcom will continue to work with industry and BT on this issue, but sees no need at present to mandate particular types of access from BT. However, should we in the future be presented with evidence that BT is not meeting a reasonable demand for disaggregated TDM access and backhaul products, we would consider using our powers to mandate such access as necessary.
- 8.221 In the January 2008 consultation, we also expressed our concern that saw-tooth discounts, which are offered by BT on some products, may act as a barrier to market entry or expansion and, in a market characterised by SMP, may restrict the development of competition. Given their potentially anti-competitive effects, we remain of the view that in the future there should be a presumption that saw-tooth discounts are unduly discriminatory in the future.
- 8.222 The obligations set out above will also apply to interconnection and accommodation services in this market as discussed at paragraph 8.448 and following later in this Section.
- 8.223 In the remainder of this sub Section, we first set out the how we believe the obligations we are imposing on BT meet the legal tests we are required to carry out under the Act. We then set out how we have taken into account the ERG Wholesale Leased Lines Common Position on remedies in setting what we believe is the appropriate level of obligations on BT in order to promote greater competition in the downstream retail market for low bandwidth TI leased lines.

Communications Act tests

Introduction

- 8.224 It is our view that the regulatory obligations we are imposing on BT comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on BT, how we believe it meets the appropriate legal tests under Section 47(2) of the Act. Finally, We set out how we believe the cost orientation obligation we are imposing on BT meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

- 8.225 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. This implements Article 8 of the Access Directive.

- 8.226 Having considered all responses to the consultations and all evidence available to us, we have identified in Section 7 BT as having SMP in this market. In the light of the assessment of the costs and benefits of addressing the SMP through the remedies considered at paragraph 8.214, we have concluded that BT shall be subject to the obligations set out at paragraph 8.216 and following in this Section.
- 8.227 For the reasons set out in paragraphs 8.137 to 8.177 of the January 2008 consultation, and summarised at paragraph 8.214, we believe it is appropriate to impose such conditions on BT in relation to the objective we have set out to achieve in this review for the market for very high bandwidth 155 Mbit/s TISBO in the UK. In particular, in relation to the promotion of greater competition in the downstream retail market, which, we consider, would bring substantial benefits to end users by increasing their access to a competitive choice of prices and providers.
- 8.228 Finally, when considering what should be the appropriate remedies, we have had regard to a series of considerations as set out at paragraph 8.109 in this Section.

Reliance on Competition Law alone not sufficient

- 8.229 The case for not relying on Competition Law alone to remedy the finding of market power on BT is the same as the case for the other wholesale markets for terminating segments of leased lines where BT has been found to have SMP. We do not therefore repeat these arguments here, and refer to the discussion provided in relation to the market for low bandwidth TISBO at paragraph 8.110 and following in this Section.

Tests under Section 47(2) of the Act

- 8.230 We set out in the table below how we think each remedy passes the relevant Communications Act tests as set out in Section 47(2) of the Act, according to which each obligation must be:
- objectively justifiable in relation to the networks, services or facilities to which it relates;
 - not such as to discriminate unduly against particular persons or a particular description of persons;
 - proportionate to what the condition is intended to achieve; and
 - in relation to what it is intended to achieve, transparent.

Table 8.8: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on BT as a result of it having SMP in the market for very high bandwidth 155 Mbit/s TISBO in the UK excluding the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to provide access</i>			
The obligation is objectively	The obligation does not discriminate unduly as it	The obligation is proportionate since BT is	The obligation is transparent since the

<p>justifiable as, in the absence of this condition, BT might refuse to supply very high bandwidth 155 Mbit/s TISBO, which would prevent effective competition in the retail market. By ensuring that OCPs can gain access to BT's wholesale very high bandwidth 155 Mbit/s TISBO services on fair and reasonable terms, it will enable OCPs to compete in the retail leased lines market. By enabling OCPs to compete fairly with BT, it puts pressure on BT to reduce costs and so promotes efficiency, confers the greatest possible benefits on end-users and promotes effective and sustainable competition. Although the charge control conditions will, if imposed following our separate consultation, limit average charges, they will not in themselves require BT to supply very high bandwidth 155 Mbit/s TISBO.</p>	<p>applies only to operators which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, distort competition by denying access on fair and reasonable terms.</p>	<p>not required to provide access if the request is unreasonable and because Ofcom does not consider that other operators will install competing facilities to an extent to undermine BT's SMP. BT is already providing network access, which is therefore clearly feasible. In the absence of Ex-ante regulation, entry barriers and BT's SMP mean that competition might never become established.</p>	<p>condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<p><i>Non discrimination</i></p>			
<p>The requirement is justified because otherwise BT, as a vertically integrated operator, would be able to distort competition by discriminating against its rivals to the benefit of its own (downstream)</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by discriminating against competitors.</p>	<p>The requirement is proportionate in that only discrimination which is unduly is prohibited and because it is the least onerous obligation required to address this particular risk of harm to competition. Ex ante regulation is more effective than ex post</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<p>divisions, e.g. through charging other operators higher prices than it charges BT Retail. It also ensures that BT does not abuse its SMP position by charging excessive prices or offering inadequate quality of service to particular groups of customer and, via the retail market, to end users. The requirement therefore promotes competition and furthers the interests of consumers.</p>		<p>competition law where, as here, entry barriers and SMP mean that otherwise, effective competition might never become established.</p>	
<i>Cost orientation</i>			
<p>The requirement is justified because, although the charge control conditions will, if imposed following our separate consultation, limit average charges, they do not in themselves control the level of individual charges within a basket subject to an average charge control. In the absence of this condition, BT might set individual charges at excessively high or anti-competitively low levels within a basket.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by setting charges which are not based on costs.</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a reasonable return on investment, the cost orientation condition allows BT's charges to be proportionate to the extent of BT's investment in the provision of the relevant services. Ex ante regulation is necessary for the reasons set out above.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<i>Transparency obligations</i>			
<p>These obligations are justified in that they provide certainty to operators and prevent BT withholding information from customers and competitors, or</p>	<p>The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, exploit customers and distort competition by</p>	<p>The obligations are proportionate as the information which BT is obliged to publish is necessary to enable OCPs to make effective use of the network access which BT is also required to provide. The transparency obligations</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained</p>

<p>misusing information in a way which could harm competition. In addition, they facilitate Ofcom's monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.</p>	<p>withholding or misusing information.</p>	<p>therefore support the other conditions imposed to address BT's SMP in this market. Without this information, OCPs could be unable to compete fairly with BT.</p>	<p>in this document.</p>
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Test under Section 88 of the Act

8.231 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and
- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and conferring the greatest possible benefits on end-users.

8.232 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:

- So fix and maintain some or all of its prices at an excessively high level, or
- So impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.

8.233 As discussed in Section 7, where we assessed SMP in this market, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion. In particular, we have identified the risk that BT, given its market power, could engage in price discrimination between its downstream arms and its competitors when granting access to its network. We think therefore that without an obligation to orient prices to costs, BT could, given its scale and scope advantages, afford to price below cost to deter further entry and push competitors out of the market (i.e. margin squeeze). It could also price above cost, which would result in higher prices for end users in retail markets, given the reliance of the market on BTs' wholesale access services. Given that the dominant provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions ex Section 88(3).

8.234 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. We set out why we think this condition is appropriate in paragraph 8.164 of the January 2008 consultation.

8.235 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:

- promotes efficiency, by promoting cost based pricing and efficient market entry; and
- confers the greatest possible benefits on the end-users by ensuring that providers competing for customers in the retail market are not exploited by BT setting unreasonable conditions in the wholesale market.

8.236 The cost orientation condition that Ofcom is imposing requires that, unless Ofcom directs otherwise, BT shall set all charges such that they are reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs. If a charge were set below the long run incremental cost of supply, then some customers may buy that product when they would not have been prepared to pay the full long run incremental costs of providing it. This is likely to be inefficient and result in a loss for society as a whole. Moreover, such a low charge is likely to be inconsistent with promoting sustainable wholesale competition, because it could mean that an equally efficient competitor is prevented from entering the market because it is unable to recover its incremental costs. By promoting efficiency and ensuring that competition is not distorted, requiring charges not to be below long run incremental costs will tend to confer the greatest benefits on end users. If a charge were above long run incremental costs plus an appropriate mark up, then it is higher than it needs to be in order to produce the service and this is unlikely to be in consumers' interests. If there were particular circumstances that mean that a charge set on the basis of long run incremental costs plus an appropriate mark up would not be appropriate, and would be detrimental to consumers' interests, then the condition allows Ofcom to direct that the charges are not required to be set on that basis.

Account taken of the ERG Wholesale Leased Lines Common Position

8.237 In accordance with ERG's Statement of 12 October 2006⁹⁴, while ERG Common Positions are not binding, ERG members must take the utmost account of them. Table 8.9 below summarises how Ofcom has taken into account the ERG Wholesale Leased Lines Common Position in proposing the regulatory remedies for this market.

Table 8.9 Account taken of the ERG Wholesale Leased Lines Common Position

Objective of remedy	Account taken by Ofcom
Assurance of supply	The requirement to provide Network Access on reasonable request should provide competitors with reasonable certainty of ongoing supply of wholesale leased lines in order to give them confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms

⁹⁴ ERG(06)51.

	and conditions in advance should provide clarity of terms and conditions of wholesale leased lines.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and the requirement to publish technical information and the obligation relating to request for new network access should ensure that the technical parameters of access are reasonable. In addition, the obligation to provide certain interconnection services should provide competitors with the ability to interconnect efficiently and economically at a wide range of locations for the purpose of wholesale leased lines interconnection.
Fair and coherent access pricing	The cost orientation obligation and the obligation to comply with charge controls should guarantee competitors that prices for wholesale leased lines is coherent with other services and gives the appropriate incentives for efficient investment decisions to both the SMP operator and its competitors.
Reasonable quality of access products	The proposed revisions of the SLAs/SLGs regime for PPCs should deliver a much improved framework for dealing with the quality of the services provided by BT to its competitors.

Wholesale market for low bandwidth AISBO in the UK excluding the Hull area

Introduction

- 8.238 In this sub Section, we set out the regulatory obligations that we intend to impose on BT as a result of our finding of it having SMP in the provision of low bandwidth AISBO in the UK excluding the Hull area.
- 8.239 We first set out a summary of our proposals as set out in the January 2008 consultation. Secondly, we review the responses to the consultations, providing our response to the issues raised by respondents. Thirdly, we review the choice of the appropriate remedies, having regard to all responses and all evidence available to us. We then set out our conclusions and the remedies we have decided to impose on BT.
- 8.240 The last part of this sub Section sets out how we believe our obligations comply with the relevant tests in the Act. In addition, we set out how we have taken into account the ERG WLL CP in setting our obligations.

Summary of proposals

- 8.241 In paragraphs 7.310 to 7.334 of the January 2008 consultation we set out our proposals in support of the finding of SMP for BT in this market. This finding has now been confirmed in Section 7. In the table below, we set out the key arguments in support of our finding.

Table 8.10 Key market power indicators

	Wholesale low bandwidth AISBO market	Downstream retail market
<i>Quantitative indicators</i>		
Market Share	73% (was 78% in the 2003/04 Review ⁹⁵)	72% (was 70-75% in the 2003/04 Review ⁹⁶)
Profitability	31% ROCE ⁹⁷	Not available
<i>Qualitative indicators</i>		
The ubiquity of BT's infrastructure and the fact that such infrastructure is not easily duplicated		
BT's ability to exploit economies of scale and scope		
The existence of significant barriers to entry and expansion, including as a result of sunk costs		

8.242 In paragraphs 8.208 to 8.267 of the January 2008 consultation we then reviewed the regulatory options available to us, identified which option we believed would most appropriately serve our policy objectives, and which remedies, if any, should apply to BT in relation to its proposed SMP determination in the provision of low bandwidth AISBO in the UK excluding the Hull area. We present a summary of that assessment in the following paragraphs.

Options assessment

8.243 Before setting out our analysis of appropriate remedies, we considered broader policy options and how best we could meet our policy objectives, given the finding of SMP and BT's persistently high market share since 2004. Two alternatives were identified, namely maintaining the existing regulation or varying it to address the shortcoming we had identified, against the counterfactual of not imposing any regulation at all.

8.244 Specifically, in the January 2008 consultation, we considered the following regulatory options:

- *No regulation;*
- *Status quo*, which means to continue to regulate BT's provision of low bandwidth AISBO, with the same SMP Conditions as set out in the 2003/04 Review; and
- *Variations and additional measures*, including: reviewing the SLA/SLGs regime, regulating the provision of accommodation services required by OCPs to aggregate wholesale low bandwidth AISBO services, removing the distance limits for WESs and BESs, and imposing of a charge control on these services.

⁹⁵ As stated in paragraph 7.315 of the January 2008 consultation, BT's market share for this market in the 2003/04 Review encompassed all bandwidths.

⁹⁶ As stated in paragraph A6.15 of the January 2008 consultation, BT's market share for this market in the 2003/04 Review encompassed all bandwidths. Its' share of AI services below 100 Mbit/s was estimated to be between 75% and 80%, its share of 100 Mbit/s services was found to be 70%, and its share of 1 Gbit/s services was found to be 55-60%.

⁹⁷ This figure relates to all AISBOs, but the large majority of the revenue relates to bandwidths up to and including 1Gbit/s, suggesting that the ROCE would be similar for this market in isolation. In the January 2008 consultation, we reported 20 per cent, based on BT's 2006/07 results, though this has since been restated.

- 8.245 In paragraphs 8.208 to 8.235 of the January 2008 consultation, for each option we considered how well it would serve our policy objectives, how it would affect the development of competition in downstream retail markets, and the impact it would have on the various key stakeholders, including BT.
- 8.246 Given our proposal to find that BT had SMP in this market, we set out why we believed that other providers would require regulated access from BT to be able to compete effectively in downstream retail leased lines markets. We had found BT to have persistently high market shares over time which were also reflected in the downstream retail market, and to be deriving an advantage from the ubiquity of its infrastructure and from economies of scale and scope not available to its competitors. In the absence of regulation, we argued, BT would be able to leverage its market power into the downstream market by restricting access to its network, thus reducing end user access to a choice of competitive services and prices. We considered therefore that the option of no regulation would poorly serve our objectives and, in particular, the promotion of competition in downstream markets for the benefit of end users.
- 8.247 Having found that some regulation was likely to be appropriate we considered whether the evidence available to us suggested that the current regime could be improved.
- 8.248 As for other markets, the starting point was to consider the current obligations and their effectiveness. Various regulatory obligations have been in place on BT since the 2003/04 Review was completed in June 2004. Yet BT's market share does not appear to have changed significantly in either this market or the related retail market. In the course of the review, we had received various representations, from OCPs amongst others, which pointed to some weaknesses in the existing regime in promoting competition.
- 8.249 In paragraphs 8.215 to 8.232 of the January 2008 consultation we discussed what the appropriate variations should be, based on the issues and shortcomings of the current regime that had emerged in the course of the review. We present below a summary of the discussion for each proposed variation.

Accommodation in local exchanges

- 8.250 Some OCPs had expressed dissatisfaction with the accommodation product offered by BT to enable aggregation of disaggregated access and backhaul products at the exchanges. In particular, they had lamented that the service was not offered at regulated terms and conditions, and that it did not provide for an efficient use of accommodation already purchased for supporting LLU services.

Product development

- 8.251 Several CPs had argued that BT was being slow in developing new Ethernet wholesale services based on WDM technology to provide, in particular, more cost efficient backhaul products. Ofcom had been seeking to address this issue through discussions with BT over the implementation of the Undertakings. At the time of the January 2008 consultation, BT had initiated a programme of investments in WDM technology under the name of Project ORCHID. We considered that we should continue to work with BT and industry to ensure that BT committed to an appropriate roll out timetable for wholesale Ethernet products based on Project ORCHID and that we should consider such a commitment through a separate consultation, which we expected to publish later in 2008.

Limited distance of BES and WES services

8.252 BT's Undertakings had set a limit of 25 Kms radial distance (35 Kms route distance) for BESs and WESs to ensure that OCPs would not use these products to build their trunk networks. We considered that such restrictions should be removed, as they were, in some cases, hampering OCPs ability to access appropriate backhaul services.

Excessive and discriminatory pricing

8.253 After reviewing the cost and revenue data for these services in Annex 12 of the January 2008 consultation, we provisionally concluded that the return that BT was earning on low bandwidth AISBO services appeared to be significantly in excess of its cost of capital. We considered that such returns were not compatible with those earned in a competitive market, and, as a result, efficient competition might be restricted or distorted. In addition, those high returns could have detrimental effects for end users through the setting of retail prices above those that could be found in a competitive market.

8.254 BT has been subject to a cost orientation requirement for these services since the 2003/04 Review. We considered however that, given the relatively high returns, a cost orientation alone might not be enough in the future. We therefore considered that, among other things, Ofcom should look further at the adoption of charge controls for low bandwidth AISBO services, and that we would consult separately on it.

SLAs/SLGs regime

8.255 At the time of the January 2008 consultation, Ofcom had initiated a review of the Ethernet SLAs/SLGs regime through a separate project. This project was to address the inconsistency in the regime, and the unsatisfactory levels of SLGs offered by BT, which were not in line with the penalties providers would have to pay to end users for compensating delays in delivering or repairing AI services.

Simplification of the existing notification regime

8.256 Following the implementation of BT's Undertakings, BT is subject to an Equivalence of Input (EoI) obligation for its wholesale access and backhaul Ethernet services. This obligation was designed to deter non-price discrimination behaviour and, in particular, to prevent BT from discriminating between its downstream divisions and its competitors who need access to its access and backhaul Ethernet products. We considered that, in the presence of such an obligation, there could be scope for reducing the regulatory burden on BT and, particularly, for withdrawing some of the existing SMP obligations relating to the notification of changes to prices, terms and conditions, technical information and requests for new network access.

Conclusion on the choice of option

8.257 For the reasons outlined above, our preliminary conclusion was that the current regime required would need to be amended if it is to promote greater competition in the downstream retail market in the future. We considered that the option of keeping the current framework unaltered would not serve well our policy objectives.

8.258 We argued that some elements of the existing framework should be retained. In particular, BT should still be required to provide access on regulated and transparent

terms and conditions. However, we had concluded in the course of the review that some changes were required. We therefore suggested that we should adopt the following variations and additional measures:

- Regulate the provision of accommodation services required by OCPs to aggregate wholesale AISBO services;
- Ensure a timely development of WDM based wholesale AISBO services by BT;
- Ensure that the distance limits on WESs and BESs are removed;
- Complete the review of the Ethernet SLAs/SLGs regime; and
- Simplify the notification regime applying to BT.

8.259 In addition, we considered that Ofcom should review the introduction of charge controls for low bandwidth AISBO services, which would be considered in a separate consultation.

8.260 Finally, at paragraph 8.233 of the January 2008 consultation we considered the impact on stakeholders of the different options. We concluded that the option of varying the existing regime with the proposed amendments had the greatest benefits, as it would best achieve the promotion of competition, and would set the basis for future lower prices and better quality services for end users.

Preliminary conclusions: proposed regulatory obligations

8.261 Having reviewed what the appropriate level of remedies should be, we therefore proposed the following obligations should apply to BT:

- an obligation to provide Network Access;
- a requirement not to unduly discriminate;
- cost orientation;
- charge controls (although the imposition of such a remedy would be subject to further consultation); and
- a requirement to publish a reference offer.

8.262 With respect to SLAs/SLGs, we proposed to incorporate Ofcom's separate work on Ethernet SLAs/SLGs, once completed, by means of a Direction to be imposed under the SMP access obligation.

8.263 We proposed to continue to engage with BT to ensure that it would develop and launch in a timely manner new AISBO services based on Project ORCHID and, where appropriate, obtain specific commitments from BT on the launch of such services.

8.264 We also proposed to regulate more tightly BT's provision of accommodation services in relation to wholesale disaggregated AISBO products and to ensure the removal of the distance limits on BESs and WESs. In particular, we proposed to extend the obligations applying to BESs and WESs to BT's accommodation service in support of disaggregated Ethernet products.

- 8.265 In addition, we considered that Ofcom should further consider the opportunity to impose charge controls on all low bandwidth AISBO services, including accommodation services, on which we would consult separately.
- 8.266 In paragraph 8.267 of the January 2008 consultation we set out how we thought the proposed remedies met the Communications Act tests. We have set out at the end of this sub Section the appropriate Communications Act tests in detail for each of the regulatory obligations we have concluded will apply to BT.

Responses to the consultations and Ofcom's response

Charge controls

- 8.267 Most OCPs expressed their support for the proposal to further consider charge controls.
- 8.268 BT, on the other hand, argued that the charge controls for wholesale Ethernet services are, in their view, unjustified, on the grounds that:
- there is effective competition in geographic areas such as city centres;
 - a charge control would force Openreach to focus on delivering efficiency gains to meet its regulatory commitments, and this would divert effort and resources away from service innovation, to the detriment of its customers;
 - Openreach plans to introduce new pricing structures in the near future which are likely to make a new price cap redundant and disproportionate. These new price structures may include geographic pricing, and a price control could have unintended consequences for this development;
 - BT recognises that there may be a basis for different charging where there are public safety and policy considerations, e.g. in relation to products used in relation to the CCTV market; and
 - it considers that a price control could act as a significant disincentive for investment by other players.
- 8.269 In case a charge control is imposed, BT argued that it should be light-touch and flexible, with the capability of being adapted to reflect uncertainty and change in this developing area of business connectivity. Further, BT argued that the key test for any price cap should be that it does not adversely impact incentives to introduce the new and innovative services that the market demands.
- 8.270 Having considered these responses, we remain of the view charge controls should be applied to the services provided by BT in this market. BT argued that it faces effective competition in some geographies, and that, as a result, a charge control would be disproportionate. We have considered BT's comments in relation to varying degree of competition in this market at paragraph 6.17 and have concluded that the market is national in scope. In Section 7, we have found that BT is dominant in this market and that we consider the market is not prospectively competitive (see paragraph 7.137). In addition, we have found that BT is earning high returns on these services (see paragraph 7.135). In the absence of a charge control, we consider there is a significant risk that BT could increase its charges above competitive levels, and that this could lead to higher prices in retail markets, to the detriment of consumers.

- 8.271 BT has also made the point that a charge control could discourage investments in alternative infrastructures. However, we consider the likelihood of this occurring to be low. Since the 2003/04 Review, when these services were excluded from charge controls due to the emerging nature of the market, we have found in Section 7 that even with BT earning high returns on these services, very limited alternative infrastructure has been deployed in this market.
- 8.272 BT has also argued that a charge control could discourage innovation. We disagree with this view. Historically, charge controls have been preferred to other means of controlling prices because of their ability to incentivise efficiency and, through this, innovation.

Transparency deregulation

- 8.273 Many respondents objected to the proposed deregulation of certain transparency obligation. OCPs argued that the Undertakings alone are insufficient because BT does not use the same backhaul products, and because the Undertakings offer relatively weak enforcement options.
- 8.274 BT supported the deregulation, as did one CP that noted that it would bring some benefits to CPs provided the impact of deregulation was monitored closely.
- 8.275 We have reviewed this issue, in particular in the light of the new market definition set in Section 6 which we are implementing in this Statement. In particular, we have concluded that the boundaries of the wholesale AISBO market should be identified by a set of 56 aggregation nodes. Currently the EoI obligation under the Undertakings applies to access and backhaul services up to BT's Metro nodes, of which there are 106. If we were to relax certain notification obligations as proposed in the January 2008 consultation, and in the absence of an extension of the EoI obligation, OCPs purchasing wholesale AISBO terminating segments which require inter-Metro transport could be placed at a disadvantage, relative to BT's own downstream business.
- 8.276 We have therefore reconsidered our proposals in the light of the new market definition, and believe it is appropriate to continue to require BT to comply with certain transparency obligation for the market for wholesale low bandwidth AISBO in order to avoid the risk of undue discrimination between customers, including obligations relating to requests for new network access.
- 8.277 One alternative solution could have been to reconsider the extent of the EoI obligation currently applying to BT under the Undertakings. However, such an opportunity should be considered as part of the on going implementation of BT's Undertakings, rather than as a piecemeal solution to a potential problem in a particular market. Should such an extension of the EoI obligation be considered in the future, we would reconsider the opportunity to relax certain notification requirements on BT.

Concerns about ORCHID

- 8.278 Several respondents expressed uncertainty about project ORCHID and demanded that its impact be considered in the charge controls. They also demanded that Ofcom extract public commitments from BT on the rollout of ORCHID.
- 8.279 With respect to extracting public commitments with respect to the launch of project ORCHID, Ofcom notes that, following engagement with all stakeholders, BT has

published its plans for productising project ORCHID, and that same services, such as the Ethernet Backhaul Direct, are already being offered to CPs. We therefore consider that, as long as BT and industry continue to work together effectively for the launch of new products and services based on Project ORCHID, there is no need at present for Ofcom to manage the process.

- 8.280 With respect to the comment on the treatment of project ORCHID in the review of charge controls, we have provided already our response to points raised in relation to charge controls at paragraph 8.270 above.

Distance limits for WESs, BESs, and WEES

- 8.281 BT and UKCTA both welcomed the proposed removal of distance limits for WESs and BESs. UKCTA argued that the 25km limit for WEES should remain.
- 8.282 Having considered these comments, we think it is appropriate to confirm the removal of the distance limits, but keep those limits in place for WEES services, in order to encourage infrastructure competition over longer distances.

SLAs/SLGs regime

- 8.283 Several respondents agreed with our proposal that the SLAs/SLGs regime for wholesale AISBO services should be more tightly regulated.
- 8.284 Ofcom has now completed the review of SLGs for BT's wholesale Ethernet portfolio, and has indicated what it considers to be a fair and reasonable set of SLGs for these products, having taken into account the work done by industry and the OTA2 in this area. A new commercial framework is currently being implemented by the industry. We set out in detail at paragraph 8.481 and following our approach for the SLAs/SLGs regime, which includes adopting the approach taken in the SLG Statement⁹⁸ and carry this over under the new SMP conditions. Ofcom believes that problems with the quality of these services from Openreach should be largely solved once the new commercial framework is implemented.

Review of proposals for remedies

- 8.285 We have reviewed our proposals for remedies having regard to all the responses and representations received and all the evidence available to us following the January 2008 consultation. Our original proposals were set out in full at paragraphs 8.236 to 8.263 of the January 2008 consultation, and a summary has been provided at paragraphs 8.261 to 8.266 above.
- 8.286 We consider that the regulatory objectives and analysis of the appropriate regulatory obligations for this market are broadly the same as for the high bandwidth TISBO market in the UK excluding the CELA and the Hull area, as described in paragraphs 8.154 to 8.166 above. The low bandwidth AISBO market is very large. BT's (internal and external) revenues for all AISBO bandwidths were around £440m in 2007/08⁹⁹, and the large majority of this is likely to be for low bandwidth circuits. Given the size of the market and BT's SMP position, there is scope for significant consumer harm if BT were not regulated. For the same reasons as for the high bandwidth TISBO

⁹⁸ <http://www.ofcom.org.uk/consult/condocs/slg/statement/>

⁹⁹ Source: BT Regulatory Financial Statement 2007/08, <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2008/Regulatoryfinancialstatements2008.htm>

market in the UK excluding the CELA and the Hull area, we consider it appropriate to impose a broadly similar set of remedies.

- 8.287 OCPs generally opposed our proposals for relaxing certain notification obligations currently applying to BT in relation to AISBO products. We have reconsidered our proposals in the light of those comments and in the light of the market definition set out in Section 6, and we have concluded, for the reasons discussed at paragraphs 8.273 to 8.277, that it would not be appropriate to confirm our proposal. We are therefore keeping the current transparency obligations on BT.
- 8.288 Stakeholders agreed with us in relation to the proposals for the review of the Ethernet SLAs/SLGs and the removal of the distance limits currently applying to WESs and BESs. This issue will be considered further in the context of a possible amendment to BT's Undertakings.

Conclusions

- 8.289 Having considered all responses to the consultations, and having reviewed all evidence available to us, we conclude the review of this market by setting out below the appropriate regulatory obligations to apply to BT. In reaching our decision we have taken account of the considerations described in paragraphs 8.8 to 8.25 above. The reasons for our conclusion are referred to in the paragraph 8.285 above.
- 8.290 Using the powers conferred upon Ofcom under Sections 87 and 88 of the Act, Ofcom has therefore decided to impose the following obligations on BT in the market for low bandwidth AISBO in the UK, excluding the Hull area:
- an obligation to provide Network Access;
 - a requirement not to unduly discriminate;
 - cost orientation;
 - a requirement to publish a reference offer;
 - an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
 - an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
 - a requirement to publish quality of service information;
 - a requirement to notify technical information with 90 days notice; and
 - obligations relating to requests for new network access.
- 8.291 We also consider that BT should in principle be subject to a charge control with respect to the services in this market, the scope and form of which is considered in a separate consultation published alongside this Statement.
- 8.292 With respect to the SLAs/SLGs regime that should apply to services in this market, Ofcom and the OTA2 have now completed the work referred to in the January 2008

consultation. As a result, Ofcom has issued a Statement on Ethernet SLGs¹⁰⁰, which imposed a new SLG Direction under the existing SMP conditions imposed by the 2003/04 Review. We intend to re impose the SLG Direction under the new SMP Conditions that will apply once this Statement is published. We further set out our decisions in relation to the future SLAs/SLGs regime in paragraph 8.481 and following later in this Section.

- 8.293 The obligations set out above will also apply to interconnection and accommodation services in this market as discussed at paragraph 8.448 and following later in this Section.
- 8.294 In the remainder of this sub Section, we first set out how we believe the obligations we are imposing on BT meet the legal tests we are required to carry out under the Act. We then set out how we have taken into account the ERG WLL CP in setting what we believe is the appropriate level of obligations on BT in order to promote greater competition in the downstream retail market for low bandwidth AI leased lines.

Communications Act tests

Introduction

- 8.295 It is our view that the regulatory obligations we are imposing on BT comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on BT, how we believe it meets the appropriate legal tests under Section 47(2) of the Act. Finally, We set out how we believe the cost orientation obligation we are imposing on BT meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

- 8.296 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. This implements Article 8 of the Access Directive.
- 8.297 Having considered all responses to the consultations and all evidence available to us, we have identified in Section 7 BT as having SMP in this market. In the light of the assessment of the costs and benefits of addressing the SMP through the remedies considered at paragraph 8.285 and following in this Section, we have concluded that BT shall be subject to the obligations set out at paragraph 8.290 and following in this Section.
- 8.298 For the reasons set out in paragraphs 8.137 to 8.177 of the January 2008 consultation, and reviewed at paragraph 8.285 of this Section, we believe it is appropriate to impose such conditions on BT in relation to the objective we have set out to achieve in this review for the market for low bandwidth AISBO in the UK. In

¹⁰⁰ *Service level guarantees: incentivising performance*, 20 March 2008, <http://www.ofcom.org.uk/consult/condocs/slg/statement/>

particular, in relation to the promotion of greater competition in the downstream retail market. This would bring substantial benefits to end users by increasing their access to a competitive choice of prices and providers.

8.299 Finally, when considering what should be the appropriate remedies, we have had regard to the considerations set out in paragraph 8.109 of this Section.

Reliance on Competition Law alone not sufficient

8.300 The case for not relying on Competition Law alone to remedy the finding of market power on BT is the same as the case for the other wholesale markets for terminating segments of leased lines where BT has been found to have SMP. We do not therefore repeat these arguments here, and refer to the discussion provided in relation to the market for low bandwidth TISBO at paragraph 8.110 and following in this Section.

Tests under Section 47(2) of the Act

8.301 We set out in details in the table below how we think each remedy passes the relevant Communications Act tests. In particular, how we believe each obligation we are imposing on BT meets the tests set out in Section 47(2) of the Act, according to which each obligation must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

Table 8.11: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on BT as a result of it having SMP in the market for low bandwidth AISBO in the UK excluding the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to provide access</i>			
The obligation is objectively justifiable as, in the absence of this condition, BT might refuse to supply low bandwidth AISBO, which would prevent effective competition in the retail market. By ensuring that OCPs	The obligation does not discriminate unduly as it applies only to operators which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, distort competition by denying access on fair and reasonable terms.	The obligation is proportionate since BT is not required to provide access if the request is unreasonable and because Ofcom does not consider that other operators will install competing facilities to an extent to undermine BT’s SMP. BT is already providing network	The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.

<p>can gain access to BT's wholesale low bandwidth AISBO services on fair and reasonable terms, it will enable OCPs to compete in the retail leased lines market. By enabling OCPs to compete fairly with BT, it puts pressure on BT to reduce costs and so promotes efficiency, confers the greatest possible benefits on end-users and promotes effective and sustainable competition. Although the charge control conditions will, if imposed following our separate consultation, limit average charges, they will not in themselves require BT to supply low bandwidth AISBO.</p>		<p>access, which is therefore clearly feasible. In the absence of Ex-ante regulation, entry barriers and BT's SMP mean that competition might never become established.</p>	
<p><i>Non discrimination</i></p>			
<p>The requirement is justified because otherwise BT, as a vertically integrated operator, would be able to distort competition by discriminating against its rivals to the benefit of its own (downstream) divisions, e.g. through charging other operators higher prices than it charges BT Retail. It also ensures that BT does not abuse its SMP position by charging excessive prices or offering inadequate quality of service to particular groups of customer and, via the retail market, to</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by discriminating against competitors.</p>	<p>The requirement is proportionate in that only discrimination which is unduly is prohibited and because it is the least onerous obligation required to address this particular risk of harm to competition. Ex ante regulation is more effective than ex post competition law where, as here, entry barriers and SMP mean that otherwise, effective competition might never become established.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<p>end users. The requirement therefore promotes competition and furthers the interests of consumers.</p>			
<p><i>Cost orientation</i></p>			
<p>The requirement is justified because, although the charge control conditions will, if imposed following our separate consultation, limit average charges, they do not in themselves control the level of individual charges within a basket subject to an average charge control. In the absence of this condition, BT might set individual charges at excessively high or anti-competitively low levels within a basket.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by setting charges which are not based on costs.</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a reasonable return on investment, the cost orientation condition allows BT's charges to be proportionate to the extent of BT's investment in the provision of the relevant services. Ex ante regulation is necessary for the reasons set out above.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<p><i>Transparency obligations</i></p>			
<p>These obligations are justified in that they provide certainty to operators and prevent BT withholding information from customers and competitors, or misusing information in a way which could harm competition. In addition, they facilitate Ofcom's monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.</p>	<p>The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, exploit customers and distort competition by withholding or misusing information.</p>	<p>The obligations are proportionate as the information which BT is obliged to publish is necessary to enable OCPs to make effective use of the network access which BT is also required to provide. The transparency obligations therefore support the other conditions imposed to address BT's SMP in this market. Without this information, OCPs could be unable to compete fairly with BT.</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>

Test under Section 88 of the Act

8.302 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and
- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and conferring the greatest possible benefits on end-users.

8.303 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:

- So fix and maintain some or all of its prices at an excessively high level, or
- So impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.

8.304 As discussed in Section 7, where we assessed SMP in this market, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion. In particular, we have identified the risk that BT, given its market power, could engage in price discrimination between its downstream arms and its competitors when granting access to its network. In addition, in Section 7 we have also found that BT could potentially be earning high returns from these services. We think therefore that without an obligation to orient prices to costs, BT could, given its scale and scope advantages, afford to price below cost to deter further entry and push competitors out of the market (i.e. margin squeeze). It could also price above cost, which would result in higher prices for end users in retail markets, given the reliance of the market on BTs' wholesale access services. Given that the dominant provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions *ex* Section 88(3).

8.305 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. We set out why we think this condition is appropriate in paragraph 8.250 of the January 2008 consultation.

8.306 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:

- promotes efficiency, by promoting cost based pricing and efficient market entry; and
- confers the greatest possible benefits on the end-users by ensuring that providers competing for customers in the retail market are not exploited by BT setting unreasonable conditions in the wholesale market.

8.307 The cost orientation condition that Ofcom is imposing requires that, unless Ofcom directs otherwise, BT shall set all charges such that they are reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs. If a charge were set below the long run incremental cost of supply, then some customers may

buy that product when they would not have been prepared to pay the full long run incremental costs of providing it. This is likely to be inefficient and result in a loss for society as a whole. Moreover, such a low charge is likely to be inconsistent with promoting sustainable wholesale competition, because it could mean that an equally efficient competitor is prevented from entering the market because it is unable to recover its incremental costs. By promoting efficiency and ensuring that competition is not distorted, requiring charges not to be below long run incremental costs will tend to confer the greatest benefits on end users. If a charge were above long run incremental costs plus an appropriate mark up, then it is higher than it needs to be in order to produce the service and this is unlikely to be in consumers' interests. If there were particular circumstances that mean that a charge set on the basis of long run incremental costs plus an appropriate mark up would not be appropriate, and would be detrimental to consumers' interests, then the condition allows Ofcom to direct that the charges are not required to be set on that basis.

Account taken of the ERG Wholesale Leased Lines Common Position

8.308 In accordance with ERG's Statement of 12 October 2006¹⁰¹, while ERG Common Positions are not binding, ERG members must take the utmost account of them. Table 8.12 below summarises how Ofcom has taken into account the ERG WLL CP in proposing the regulatory remedies for this market.

Table 8.12 Account taken of the ERG Wholesale Leased Lines Common Position

Objective of remedy	Account taken by Ofcom
Assurance of supply	The requirement to provide Network Access on reasonable request should provide competitors with reasonable certainty of ongoing supply of wholesale leased lines in order to give them confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms and conditions in advance should provide clarity of terms and conditions of wholesale leased lines.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and the requirement to publish technical information and the obligation relating to request for new network access should ensure that the technical parameters of access are reasonable. In addition, the obligation to provide certain interconnection services should provide competitors with the ability to interconnect efficiently and

¹⁰¹ ERG(06)51.

	economically at a wide range of locations for the purpose of wholesale leased lines interconnection.
Fair and coherent access pricing	The cost orientation obligation and the obligation to comply with charge controls should guarantee competitors that prices for wholesale leased lines is coherent with other services and gives the appropriate incentives for efficient investment decisions to both the SMP operator and its competitors.
Reasonable quality of access products	The proposed revisions of the SLAs/SLGs regime should deliver a much improved framework for dealing with the quality of the services provided by BT to its competitors.

Wholesale market for trunk segments in the UK

Introduction

8.309 In this sub Section, we set out the regulatory obligations that we impose on BT as a result of our finding that it has SMP in the provision of trunk segments in the UK.

8.310 We first provide a summary of the proposals as set out in the January 2008 consultation, which include a summary of the assessment of the appropriate policy options and remedies. Secondly, we review the responses to the consultations, providing our response to the issues raised therein. Thirdly, we review the choice of the appropriate remedies, having regard to all the responses and evidence available to us. We then set out our conclusions and the remedies we have decided to impose on BT.

8.311 The last part of this sub Section sets out how we believe our obligations comply with the relevant tests in the Act. In addition, we set out how we have taken into account the ERG WLL CP in setting our obligations.

Summary of proposals

8.312 In paragraphs 7.351 to 7.416 of the January 2008 consultation we set out our proposals in support of the finding of SMP for BT in this market. In Section 7, in paragraphs 7.163 to 7.177, we have now confirmed our proposed finding of SMP. In the table below, we set out the key findings in support of our view.

Table 8.13 Key market power indicators

	Wholesale trunk segments market
<i>Quantitative indicators</i>	
Market Share	58-86% (was above 50% in the 2003/04 Review ¹⁰²)
Profitability	67% ROCE (2007/08)
<i>Qualitative indicators</i>	
The ubiquity of BT's infrastructure and the fact that such infrastructure is not easily duplicated	

¹⁰² See paragraph 3.87 to 3.88, Final Statement and Notification, *Review of the retail leased lines, symmetric broadband origination and wholesale trunk segments*, June 2004.

BT's ability to exploit economies of scale and scope
The existence of significant barriers to entry and expansion

8.313 In paragraphs 8.268 to 8.358 of the January 2008 consultation we then reviewed the regulatory options available to us, identified which option we believed would most appropriately serve our policy objectives, and which remedies, if any, should apply to BT in relation to its proposed SMP determination in the provision of trunk segments. We present a summary of that assessment in the following paragraphs.

Options assessment

8.314 Before setting out our analysis of appropriate remedies, we considered the broad policy options available to us and how best we could meet our policy objectives in the light of the SMP finding and BT's persistently high share of this market. We considered two main policy options, namely keeping the existing regulation or varying it to address the shortcoming we had identified, against the counterfactual of not imposing any regulation at all. It is worth considering that trunk services are sold alongside terminating segments, and that some of the problems identified in relation to the other TISBO markets are common to trunk services as well. In the discussion below we therefore refer, where appropriate, to the discussion of the specific issue set out earlier in this Section in relation to the market for low bandwidth TISBO in the UK.

8.315 In the January 2008 consultation, we considered the following regulatory options:

- *No regulation*;
- *Status quo*, which means to continue to regulate BT's provision of trunk segments with the same SMP Conditions as set out in the 2003/04 Review; and
- *Variations and additional measures*, including: reviewing the SLA/SLGs regime; requiring BT to address flaws in the PPC regulatory accounting regime; encouraging BT to address the other obstacles to replicability identified in the 2006 review; and considering further the opportunity to impose charge controls.

8.316 For each option, we considered how well it would serve our policy objectives, how it would affect the development of competition in downstream retail markets, and the impact it would have on the various key stakeholders, including BT.

8.317 The 2003/04 Review concluded that BT had SMP in this market for the duration of that review, but that in future we should expect a competitive environment to emerge. However, in paragraphs 7.351 to 7.416 of the January 2008 consultation we set out why we proposed to find that BT still had SMP in this market.

8.318 In the absence of regulation, we argued, BT would be able to further exploit its market power by restricting access to its network and leveraging its market power into the downstream market, thus reducing end users access to a choice of competitive services and prices. We considered therefore that the option of no regulation would poorly serve our objectives and, in particular, the promotion of competition in downstream markets for the benefit of end users.

- 8.319 Having found that the current regime has had limited success in promoting competition in the provision of trunk segments, we considered how the regulatory framework might be improved.
- 8.320 We considered that a cost orientation obligation alone may be insufficient to protect consumers from very high prices. We therefore considered that a charge control may be appropriate and are consulting separately on that.
- 8.321 With respect to other variations we proposed to adopt, the arguments set out in relation to some of the issues identified in the review of the low bandwidth TISBO market also apply to trunk services. In particular, at paragraph 8.52 and following we set out why we believe it is important that BT addresses the flaws in the PPC regulatory accounting regime and other obstacles to replicability identified by Ofcom, and why we believe we need to review the SLAs/SLGs regime. All these issues cut across terminating and trunk segments, and are therefore relevant here for considering the remedies we should impose on BT.

Conclusion on the choice of option

- 8.322 For the reasons discussed above, our preliminary conclusion was that the current regime required some changes if it is to further consumers' interests and promote competition in downstream markets. We therefore considered that the option of keeping the current framework unaltered would not therefore serve well our policy objectives.
- 8.323 However, we considered that the set of remedies we should impose should include the current obligations in relation to the provision of regulated access at non discriminatory terms and conditions. If competition is to flourish, BT should still be required to provide access at regulated and transparent terms and conditions, given the ubiquity of its infrastructures compared with that of its rivals. Rather, we argued, we needed to fine tune the existing remedies and further consider the issue of how to best regulate trunk prices. We therefore suggested that we should adopt the following variations and additional measures:
- review the SLAs/SLGs regime; and
 - work with BT to address the obstacles to replicability, including the flaws in the regulatory accounting regime.
- 8.324 In addition, one of the key problems we had identified in relation to trunk segments related to the excessive return BT appeared to enjoy for these services. We therefore considered that it would be appropriate for Ofcom to further consider the imposition of charge controls covering trunk segments.
- 8.325 Finally, at paragraphs 8.280 to 8.282 of the January 2008 consultation we considered the impact on stakeholders of the different options. We concluded that the option of varying the existing regime with the proposed amendments would best further consumers' interests and promote competition, and that this option should form the basis for proposing regulatory obligations on BT.

Preliminary conclusions: proposed regulatory obligations

- 8.326 In paragraphs 8.283 to 8.295 of the January 2008 consultation we considered the appropriate remedies to impose on BT. In conclusion, we proposed that the following obligations should apply to BT:

- an obligation to provide Network Access;
- a requirement not to unduly discriminate;
- cost orientation;
- a requirement to publish a reference offer;
- an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
- an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
- a requirement to provide quality of service information;
- requirement to notify technical information with 90 days. notice; and
- obligations relating to requests for new network access.

8.327 In addition, we considered that Ofcom should consider further the imposition of charge controls, on which we would consult separately.

8.328 With respect to SLAs/SLGs, we proposed amending the current PPC Direction to reflect the work that is being done by the OTA and industry on KPIs and, once Ofcom's work on Ethernet SLAs/SLGs would be completed, aligning the SLGs in the PPC regime with that of the Ethernet regime. In addition, we committed to continue to work with BT and industry to address the remainder replicability problems identified in the review of replicability set out in Annex 13 of the January 2008 consultation.

8.329 In paragraph 8.297 of the January 2008 consultation we described how we thought the proposed remedies met the Communications Act tests. We have set out at the end of this sub Section the appropriate Communications Act tests in detail for each regulatory obligations we have concluded will apply to BT.

Responses to the consultations and Ofcom's response

Charge controls

8.330 Most respondents welcomed the proposal to further consider a charge control on trunk segments. Some OCPs suggested that new starting charges or retrospective controls should also apply.

8.331 BT opposed the imposition of a charge control on the grounds that (i) it would deter investment in competing infrastructure, and (ii) the overall returns on trunk and termination together are reasonable, such that an SMP finding would be unjustified.

8.332 With respect to BT's comments, Ofcom has reconsidered the evidence of its SMP finding on BT. In Section 7 we have concluded that BT has SMP in a national market for trunk segments of PPCs with a market share above 58%. We have also found that BT enjoys a very high return on capital employed (67%), and has maintained a uniform pricing structure across the country. The findings support our conclusion that BT has SMP in this market.

8.333 Having considered the responses, we remain of the view charge controls should be applied to the services provided by BT in this market, given BT's dominant position, the high returns it earns on trunk segments, and the fact that the market is not prospectively competitive (see paragraph 7.170). In the absence of a charge control, we consider there is a significant risk that BT could increase its charges above competitive levels, and that this could lead to higher prices in retail markets, to the detriment of consumers.

Review of proposals for remedies

8.334 We have reviewed our proposals for remedies having regard to all the responses and representations received and all the evidence available to us following the January 2008 consultation. Our original proposals were set out in full at paragraphs 8.283 to 8.297 of the January 2008 consultation, and a summary has been provided above.

8.335 We consider that the regulatory objectives and analysis of the appropriate regulatory obligations for this market are broadly the same as for the high bandwidth TISBO market in the UK excluding the CELA and the Hull area, as described in paragraphs 8.154 to 8.166 above. This market is large, with BT's (internal and external) revenues of £265m in 2007/08¹⁰³. Given the size of the market and BT's SMP position, there is scope for significant consumer harm if BT were not regulated. For the same reasons as for the high bandwidth TISBO market in the UK excluding the CELA and the Hull area, we consider it appropriate to impose a broadly similar set of remedies.

8.336 With regard to charge controls we are consulting separately on this subject. We note however that charge controls were not imposed by the 2003/04 Review in the hope that a competitive environment would emerge, but that some years later this has not happened.

Conclusions

8.337 Having considered all the responses to the consultations, and having reviewed all the evidence available to us, we conclude that the most appropriate remedies are as set out below. In reaching our decision we have taken account of the considerations described in paragraphs 8.8 to 8.25 above. The reasons for our conclusion are referred to in the paragraphs immediately above and are also set out in Sections 8.283 to 8.295 of the January 2008 consultation.

8.338 Using the powers conferred upon Ofcom under Sections 87 and 88, Ofcom has therefore decided to impose the following obligations on BT in the market for trunk segments, excluding the Hull area:

- a general obligation to provide network access on reasonable request; in particular, it will continue to be subject to the PPC Direction;
- an obligation not to discriminate unduly;
- an obligation to price products and services on a cost orientated basis;
- cost accounting and financial reporting obligations;

¹⁰³ BT Regulatory Financial statement 2007/08, <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2008/Regulatoryfinancialstatements2008.htm>

- an obligation to publish a reference offer;
- an obligation to give 90 days notice of changes to prices, terms and conditions for existing services;
- an obligation to give 28 days notice of the introduction of prices, terms and conditions for new services;
- an obligation to provide quality of service information;
- an obligation to notify technical information with 90 days notice; and
- obligations relating to requests for new network access.

8.339 We also consider that BT should in principle be subject to a charge control with respect to the services in this market, the scope and form of which is considered in a separate consultation published alongside this Statement.

8.340 With respect to the SLAs/SLGs regime that should apply to services in this market, Ofcom and the OTA have now completed the work referred to in the January 2008 consultation. We set out our decisions in relation to the future SLAs/SLGs regime in paragraph 8.481 and following later in this Section.

8.341 With respect to replicability, BT has recently written to inform us that it now considers that the remaining obstacles to replicability identified in the January 2008 consultation have been removed. In the next few months, we will work with BT and industry to assess BT's compliance with the replicability requirements. If this is confirmed, we could be more confident that in the future the regulatory obligations imposed on BT will be more effective than hitherto in promoting greater competition in downstream retail markets.

8.342 The obligations above will also apply to interconnection services in this market as discussed at paragraph 8.448 and following later in this Section.

8.343 One last issue to consider relates to the way the new market definition, based on the provision of terminating segments up to 56 newly defined aggregation nodes, relates to BT's Eol requirement set out in BT's Undertakings. Currently the boundaries for the Eol requirement are core nodes. Under the new market definition, BT will be required to provide in some cases inter Metro connectivity. In this review, we are not seeking to change the boundaries of the Eol requirement. As such Eol will continue to apply up to the current boundaries. Provided BT does continue to comply with its Undertakings, it will be up to BT how it chooses to discharge its obligation. Our preference would be to see Openreach continue to manage the whole wholesale Ethernet portfolio, and hence buy, where required, inter Metro connectivity from another part of BT.

8.344 In the remainder of this sub Section, we first set out how we believe the obligations we are imposing on BT meet the legal tests we are required to carry out under the Act. We then set out how we have taken into account the ERG Wholesale Leased Lines Common Position on remedies in setting what we believe is the appropriate level of obligations on BT in order to promote greater competition in the downstream retail market for low bandwidth TI leased lines.

Communications Act tests

Introduction

8.345 It is our view that the regulatory obligations we are imposing on BT comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on BT, how we believe it meets the appropriate legal tests under Section 47(2) of the Act. Finally, We set out how we believe the cost orientation obligation we are imposing on BT meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

- 8.346 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. This implements Article 8 of the Access Directive.
- 8.347 Having considered all responses to the consultations and all evidence available to us, we have identified in Section 7 BT as having SMP in this market. For the reasons set out in paragraphs 8.283 to 8.295 of the January 2008 consultation, and referred to in paragraph 8.335 above, we believe it is appropriate to impose such conditions on BT in relation to the objective we have set out to achieve in this review for the trunk segments market in the UK. In particular, in relation to the promotion of greater competition in the downstream retail market, which, we consider, would bring substantial benefits to end users by increasing their access to a competitive choice of prices and providers.
- 8.348 Finally, when considering what should be the appropriate remedies, we have had regard to the considerations set out in paragraph 8.109 of this Section.

Reliance on Competition Law alone not sufficient

8.349 In Section 7, we have considered in detail, among other things, if ex ante regulation would suffice to remedy the lack of competition found in this market. The arguments discussed at paragraph 7.172 are also relevant here in concluding that Competition Law alone would not be sufficient to remedy the lack of competition found in the trunk segments market.

Tests under Section 47(2) of the Act

- 8.350 We set out in details in the table below how we think each remedy passes the relevant Communications Act tests. In particular, how we believe each obligation we are imposing on BT meets the tests set out in Section 47(2) of the Act, according to which each obligation must be:
- objectively justifiable in relation to the networks, services or facilities to which it relates;
 - not such as to discriminate unduly against particular persons or a particular description of persons;

- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

Table 8.14: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on BT as a result of it having SMP in the market for trunk segments in the UK excluding the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to provide access</i>			
<p>The obligation is objectively justifiable as, in the absence of this condition, BT might refuse to supply trunk segments, which would prevent effective competition in the retail market. By ensuring that OCPs can gain access to BT’s wholesale trunk segments services on fair and reasonable terms, it will enable OCPs to compete in the retail leased lines market. By enabling OCPs to compete fairly with BT, it puts pressure on BT to reduce costs and so promotes efficiency, confers the greatest possible benefits on end-users and promotes effective and sustainable competition. Although the charge control conditions will, if imposed following our separate consultation, limit average charges, they will not in themselves require BT to supply trunk segments.</p>	<p>The obligation does not discriminate unduly as it applies only to operators which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, distort competition by denying access on fair and reasonable terms.</p>	<p>The obligation is proportionate since BT is not required to provide access if the request is unreasonable and because Ofcom does not consider that other operators will install competing facilities to an extent to undermine BT’s SMP. BT is already providing network access, which is therefore clearly feasible. In the absence of Ex-ante regulation, entry barriers and BT’s SMP mean that competition might never become established.</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<i>Non discrimination</i>			
<p>The requirement is justified because otherwise BT, as a vertically integrated operator, would be able to distort competition by discriminating against its rivals to the benefit of its own (downstream) divisions, e.g. through charging other operators higher prices than it charges BT Retail. It also ensures that BT does not abuse its SMP position by charging excessive prices or offering inadequate quality of service to particular groups of customer and, via the retail market, to end users. The requirement therefore promotes competition and furthers the interests of consumers.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by discriminating against competitors.</p>	<p>The requirement is proportionate in that only discrimination which is unduly is prohibited and because it is the least onerous obligation required to address this particular risk of harm to competition. Ex ante regulation is more effective than ex post competition law where, as here, entry barriers and SMP mean that otherwise, effective competition might never become established.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<i>Cost orientation</i>			
<p>The requirement is justified because, although the charge control conditions will, if imposed following our separate consultation, limit average charges, they do not in themselves control the level of individual charges within a basket subject to an average charge control. In the absence of this condition, BT might set individual charges at excessively high or anti-competitively low levels within a</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by setting charges which are not based on costs.</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a reasonable return on investment, the cost orientation condition allows BT's charges to be proportionate to the extent of BT's investment in the provision of the relevant services. Ex ante regulation is necessary for the reasons set out above.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>

basket.			
<i>Transparency obligations</i>			
These obligations are justified in that they provide certainty to operators and prevent BT withholding information from customers and competitors, or misusing information in a way which could harm competition. In addition, they facilitate Ofcom's monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.	The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, exploit customers and distort competition by withholding or misusing information.	The obligations are proportionate as the information which BT is obliged to publish is necessary to enable OCPs to make effective use of the network access which BT is also required to provide. The transparency obligations therefore support the other conditions imposed to address BT's SMP in this market. Without this information, OCPs could be unable to compete fairly with BT.	The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.

Test under Section 88 of the Act

8.351 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and
- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and conferring the greatest possible benefits on end-users.

8.352 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:

- So fix and maintain some or all of its prices at an excessively high level, or
- So impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.

8.353 As discussed in Section 7, where we assessed SMP in this market, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion. In particular, we have identified the risk that BT, given its market power, could engage in price discrimination between its downstream arms and its competitors when granting access to its network. In addition, in Section 7 we have also found that BT could potentially be earning high returns from these services. We think therefore that without an obligation to orient prices to costs, BT could, given its scale and scope advantages, afford to price below cost to deter further entry and push competitors out of the market (i.e. margin squeeze). It could also price above cost, which would result in higher prices for end users in retail markets, given the reliance of the market on BTs' wholesale access services. Given that the dominant

provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions ex Section 88(3).

8.354 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. We set out why we think this condition is appropriate in paragraph 8.164 of the January 2008 consultation.

8.355 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:

- promotes efficiency, by promoting cost based pricing and efficient market entry; and
- confers the greatest possible benefits on the end-users by ensuring that providers competing for customers in the retail market are not exploited by BT setting unreasonable conditions in the wholesale market.

8.356 The cost orientation condition that Ofcom is imposing requires that, unless Ofcom directs otherwise, BT shall set all charges such that they are reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs. If a charge were set below the long run incremental cost of supply, then some customers may buy that product when they would not have been prepared to pay the full long run incremental costs of providing it. This is likely to be inefficient and result in a loss for society as a whole. Moreover, such a low charge is likely to be inconsistent with promoting sustainable wholesale competition, because it could mean that an equally efficient competitor is prevented from entering the market because it is unable to recover its incremental costs. By promoting efficiency and ensuring that competition is not distorted, requiring charges not to be below long run incremental costs will tend to confer the greatest benefits on end users. If a charge were above long run incremental costs plus an appropriate mark up, then it is higher than it needs to be in order to produce the service and this is unlikely to be in consumers' interests. If there were particular circumstances that mean that a charge set on the basis of long run incremental costs plus an appropriate mark up would not be appropriate, and would be detrimental to consumers' interests, then the condition allows Ofcom to direct that the charges are not required to be set on that basis.

Account taken of the ERG Wholesale Leased Lines Common Position

8.357 In accordance with ERG's Statement of 12 October 2006¹⁰⁴, while ERG Common Positions are not binding, ERG members must take the utmost account of them. Table 8.15 below summarises how Ofcom has taken into account the ERG WLL CP in proposing the regulatory remedies for this market.

Table 8.15 Account taken of the ERG Wholesale Leased Lines Common Position

Objective of remedy	Account taken by Ofcom
Assurance of supply	The requirement to provide Network Access on reasonable request should provide competitors with reasonable certainty of ongoing supply of wholesale leased lines in

¹⁰⁴ ERG(06)51.

	order to give them confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms and conditions in advance should provide clarity of terms and conditions of wholesale leased lines.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and the requirement to publish technical information and the obligation relating to request for new network access should ensure that the technical parameters of access are reasonable. In addition, the obligation to provide certain interconnection services should provide competitors with the ability to interconnect efficiently and economically at a wide range of locations for the purpose of wholesale leased lines interconnection.
Fair and coherent access pricing	The cost orientation obligation and the obligation to comply with charge controls should guarantee competitors that prices for wholesale leased lines is coherent with other services and gives the appropriate incentives for efficient investment decisions to both the SMP operator and its competitors.
Reasonable quality of access products	The proposed revisions of the SLAs/SLGs regime for PPCs should deliver a much improved framework for dealing with the quality of the services provided by BT to its competitors.

Retail market for low bandwidth leased lines in the UK excluding the Hull area

Introduction

- 8.358 In this sub Section, we set out the regulatory obligations that are being imposed on BT as a result of our finding that it has SMP in the provision of retail analogue and digital low bandwidth TI leased lines in the UK.
- 8.359 We first provide a summary of the proposals set out in the January 2008 consultation, which include a summary of the assessment of the appropriate policy options and remedies. Secondly, we review the responses to the consultations, providing our response to the issues raised. Thirdly, we review the choice of the appropriate remedies, having regard to all the responses and all available evidence. We then set out our conclusions and the remedies we have decided to impose on BT.

8.360 The last part of this sub Section sets out how we believe our obligations comply with the relevant tests in the Act.

Summary of proposals

8.361 In paragraphs 7.38 to 7.155 of the January 2008 consultation we set out our proposals in support of the finding of SMP for BT in this market. We have now confirmed this finding in Section 7 above. In the table below, we set out the key findings in support of our view.

Table 8.16 Key market power indicators

	Analogue and low bandwidth digital TI retail leased lines market
Market Share	89% (was 78% in the 2003/04 Review)
Profitability	Substantially above the level that competition authorities have usually found should apply in effectively competitive markets
<i>Qualitative indicators</i>	
	BT's control of infrastructure and the fact that such infrastructure is not easily duplicated
	BT's ability to exploit economies of scale and scope, also as a result of its vertical integration
	The existence of significant barriers to entry and expansion

8.362 In paragraphs 8.298 to 8.358 of the January 2008 consultation we then reviewed the regulatory options available to us, identified which option we believed would most appropriately serve our policy objectives, and which remedies, if any, should apply to BT in relation to its proposed SMP determination in the provision of analogue and digital low bandwidth TI retail leased lines in the UK excluding the Hull area. We present a summary of that assessment in the following paragraphs.

Options assessment

8.363 Before setting out our analysis of appropriate remedies, we considered our broader policy options and how best we could meet our policy objectives considering BT's SMP finding. In particular, we looked at how best we could further consumer interests by promoting more competition in this market, in which BT has a market share of 80%. We considered two main policy options, namely keeping the existing regulation or varying it to address the shortcoming we had identified, against the counterfactual of not imposing any regulation at all.

8.364 In particular, in the January 2008 consultation, paragraphs 8.301 to 8.337, we considered the following regulatory options:

- *No regulation;*
- *Status quo*, which means to continue to regulate BT's provision of analogue and low bandwidth digital TI retail leased lines in the UK, with the same SMP Conditions as set out in the 2003/04 Review; and
- *Variations and additional measures*, including: considering whether the existing service provision obligation is still necessary in view of the fact that the USD no longer requires the provision of the Minimum Set of Leased Lines; and seeking

voluntary undertakings from BT as an alternative to formal regulation, as it was done in the 2003/04 Review.

- 8.365 For each option, we considered how well it would serve our policy objectives, how it would affect the development of competition, and the impact it would have on the various key stakeholders, including BT.
- 8.366 Firstly, we considered whether we could withdraw regulation from the retail market and rely on the remedies at the wholesale level to foster competition. However, we believed that it would be premature to do so at present, for two main reasons:
- As the SMP analysis had shown, BT has a position of entrenched dominance in this market, with a persistently high market share which has increased since the last market review; and
 - Ofcom's April 2006 statement on replicability concluded that the services provided by BT in this market are not yet technically and commercially replicable by its competitors. The statement identified a number of issues which BT had to address before the services could be considered replicable, and before steps towards deregulation could be taken. We further considered the issue of Replicability in Annex 13 to the January 2008 consultation, where we concluded that, while BT had made some progress to address the deficiencies identified in the April 2006 statement on replicability, there were still a number of outstanding issues to be addressed before replicability could be considered to be achieved.
- 8.367 We did not consider therefore that the wholesale remedies applied in the related upstream market had been sufficiently effective to warrant deregulation of the retail market. If the existing SMP obligations were to be removed, we argued, there would be a risk that BT would be able to use its market position to restrict competition in the retail market either (i) by discriminating in favour of its own retail arm when supplying wholesale inputs and/or (ii) through price discrimination in the retail market, discounting where competition is strong and increasing prices where competition is weak. It was also possible that BT would cease to provide some of the legacy services in this market (such as analogue leased lines) prematurely, in order to force customers to migrate to newer and more profitable services. Outcomes of this sort, we concluded, would not be in the interests of citizens and consumers.
- 8.368 For these reasons, we proposed to reject the no regulation option. We did, however, believe that it would be appropriate to apply a sunset clause to the SMP obligations imposed in this market, to reflect our view that the development of more effective wholesale remedies would in due course make it unnecessary to apply ex ante regulation at the retail level.
- 8.369 Secondly, when considering whether to maintain the status quo, we concluded that the remedies in place were broadly appropriate. Rather, we considered that the problems identified in relation to the existing upstream remedies through the replicability analysis referred to above had meant that it has been the way that the upstream remedies have been implemented that have constrained the development of competition in this market.
- 8.370 We considered two possible variations to the existing regime. Firstly, when considering whether it would be appropriate to keep the service provision obligations in place on BT in this market, we concluded that it would be for some but not all services and, in particular, for:

- New and existing supply of 2 Mbit/s, which remains one of the key services in leased lines markets in the UK; and
- The existing installed base of analogue and digital circuits of speeds up to 2 Mbit/s.

8.371 We further considered that, given the steady decrease in volumes for the latter services over recent years, it would be more appropriate and proportionate to seek to ensure supply by means other than formal regulation. We therefore sought a voluntary undertaking from BT on the supply of analogue and low bandwidth digital circuits of speeds up to 2 Mbit/s. In addition, we asked BT for a voluntary undertaking on the price of analogue services which, unlike digital leased lines, do not have a corresponding upstream remedy designed to support downstream competition. Overall, we considered that an approach based on co-regulation would align with Ofcom's statutory duty to reduce the burden of regulation where possible. In addition, the successful experience with a similar approach from the 2003/04 Review supported our view that such an approach would be effective in dealing with the problems identified in relation to the supply and pricing of analogue services and the supply of low bandwidth digital circuits at speeds up to 2 Mbit/s.

Preliminary conclusions and proposed remedies on BT

8.372 For the reasons set out in summary above, our preliminary conclusion was that a regime based broadly on the current obligations, together with a set of voluntary undertakings from BT, would be the most appropriate option. We proposed that the following obligations should apply on BT:

- **Obligation to provide:** BT should be required to supply existing and new 2 Mbit/s retail low bandwidth leased lines to third parties on reasonable request. The supply of analogue and low bandwidth digital up to 2 Mbit/s should be addressed through a voluntary undertaking, as set out below;
- **No undue discrimination:** For all analogue and digital services at speeds up to and including 8 Mbit/s, a requirement not to unduly discriminate; and
- **Obligation to publish a Reference offer:** For all analogue and digital services of speed up to and including 2 Mbit/s, a requirement to publish prices, terms and conditions, and to notify on the same day of entering into force any changes to those prices terms and conditions.

8.373 In addition, we proposed to accept the following voluntary undertakings from BT:

- that it will continue to supply new analogue retail circuits until 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying platform is closed at an earlier date;
- that it will continue to supply new sub-2Mbit/s retail circuits until 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying wholesale products are withdrawn from new supply at an earlier date;
- that it will not increase its prices for analogue services more quickly than the rate of inflation (RPI-0%) for a period two years following the publication of the LLMR statement i.e. from 2008 to 2010; and

- that it will commit to a further two-year cap, the level of which would be agreed with Ofcom prior to 2011.
- 8.374 We proposed that a conditional cost orientation obligation in relation to the price of analogue services should apply to BT if it should fail to adhere to its pricing commitment, or if BT and Ofcom should fail to reach agreement on a further two-year cap from 2011. The cost orientation condition would require BT charges for analogue circuits to be derived from LRIC, plus a reasonable contribution to fixed common costs.
- 8.375 Finally, we proposed that a sunset clause should apply, under which these obligations would apply for a fixed period of four years from the implementation of the new regulatory framework. Unless a further market review has been completed during that time, we argued, the obligations should fall away at the end of the four year period.
- 8.376 In paragraph 8.358 of the January 2008 consultation we described how we thought the proposed remedies met the Communications Act tests. We have set out at the end of this sub Section the appropriate Communications Act tests in detail for each of the regulatory obligations we have concluded will apply to BT.

Responses to the consultations and Ofcom's response

Retail regulation

- 8.377 BT argued in its response that, in its view, ongoing retail regulation is inconsistent with fundamental regulatory principles. They argued that SMP remedies at the retail level are contrary to Ofcom's principle of focusing regulation on identified upstream problems around market access, that it is against the Undertakings, and that it contrasts with the EU Framework.
- 8.378 We have considered BT's comments, but have found in the SMP assessment sufficient causes of concern to warrant some level of regulation in the retail low bandwidth leased lines market, especially for analogue and low bandwidth digital leased lines. We do not believe that our approach is inconsistent with Ofcom's regulatory principles or with the regulatory framework within which we operate. In particular, we have sought to balance our duty to regulate where SMP is found with our duty to deregulate, where market conditions warrant it. Our approach is based on accepting voluntary undertakings from BT instead of more formal obligations. In addition, the Commission, in its comments to our Notification for these markets, has broadly accepted our arguments to continue to define this market for the purpose of SMP assessment and the imposition of remedies.
- 8.379 We consider that, in imposing retail remedies on BT, we have complied with the requirements of the Act. We set out at the end of this sub Section the arguments on which this view is based.

Replicability

- 8.380 BT argued in its response that most replicability issues have been resolved, and that full replicability is likely to be achieved in the near future. BT argued therefore that, as this is the case, it would be disproportionate for Ofcom to impose regulation for a further four years.

- 8.381 BT's response to the replicability discussion in Ofcom's consultation document can be summarised as follows:
- A finding of replicability in respect of retail low bandwidth TI PPCs means that SMP regulation in the retail low bandwidth TI market is not justified; and
 - Sufficient progress has been made in regard of the barriers identified in the Replicability Statement that Ofcom should consult now on a finding of replicability.
- 8.382 Ofcom believes that such a position is incompatible both with the market review process and with the replicability process as described in the Replicability Statement and applied in respect of WLR in Ofcom's consent *Replicability: the regulation of BT's retail business exchange line services* published on 29 May 2007¹⁰⁵ (the WLR Replicability Consent).
- 8.383 As stated above, and as described in both the Replicability Statement and the WLR Replicability Consent, a finding of replicability does not imply the removal of SMP regulation. Instead a finding of replicability is intended to lead to the publication of a consent for BT to relax certain obligations in respect of pricing transparency and non-discrimination but leaves other regulations in place. This is important for two reasons. Firstly, that the replicability process is not as rigorous as a market review and is therefore an inappropriate mechanism for determining if SMP regulation should be removed. Second the concept of replicability is, as Ofcom stated in the Replicability Statement, an on-going one and if it is subsequently found that replicability is no longer possible then the consent can be suspended in which case the SMP obligations will be re-asserted. This is important as SMP regulation is designed to prevent the abuse of market power whereas replicability is not.
- 8.384 Further, Ofcom stated that the consent would only be given initially in respect of those customers spending in excess of £1m annually with BT on communications services. This was seen by Ofcom as necessary since the granting of the consent would make it much harder to monitor BT for compliance with relevant competition legislation. To ensure that ex post compliance could still be assessed, for example during an investigation, Ofcom required BT to maintain records relating to contracts won under the consent. We believed that at least initially the consent should be restricted to high value accounts as it is more likely that such accounts have sufficient senior management oversight to ensure that such record keeping requirements are adhered to. Only after a period during which Ofcom could be satisfied that the record keeping is effective would we consider extending the consent to other, smaller business accounts. This is the approach that was followed in the WLR Replicability Consent which currently still has the restriction to high value accounts in place. To adopt an alternative approach in respect of PPCs would be inconsistent and would set a precedent for any future consideration of CPS replicability which has yet to be assessed.
- 8.385 BT asserted that Ofcom should have initiated the process to consult on replicability with respect to PPCs as BT believed it had removed many barriers and in the case of the remainder ones it had firm plans to remove those.
- 8.386 BT has followed up in September 2008 with a letter stating it is now in compliance with respect to the remainder replicability issues. We therefore intend to consider this issue again in the near future and work with the industry in the months to come to

¹⁰⁵ <http://www.ofcom.gov.uk/consult/condocs/draftconsent/statement/>

ensure that BT's assessment that it now complies with all replicability requirements is correct. We will consult separately on this matter once we have reviewed BT's evidence in support of its Statement, and intend to consider at that stage the appropriate level of deregulation that Ofcom might confer to BT following the achievement of replicability.

Sunset clauses attached to SMP conditions

- 8.387 Several respondents, including UKCTA, stated that there should be no sunset clauses attached to SMP conditions, and that remedies should not lapse without a market review within four years.
- 8.388 The European Commission also stated that Ofcom should review the market before the four year period proposed for the remedies expires.
- 8.389 We considered at the time of the January 2008 consultation that the problems identified in this market which require continued regulation would largely be resolved. In particular, that there'll be a substantial migration away from legacy analogue and TDM services, reducing the risk of consumer's harm through service withdrawal. In addition, BT has now stated that it will continue to support legacy services until 2014, which gives plenty of time for the industry to engineer a solution to migrate users onto BT's NGN after 2014, or find an alternative solution. In addition, we considered that the replicability issues would also be resolved within four years, making the wholesale remedies more effective and increasing the chances of downstream retail competition in the future. We wanted therefore to have a mechanism to reduce retail regulation automatically in four years time, without the need to review the market.
- 8.390 We have considered the respondents comments, and reviewed the objectives of this proposal. In view of those comments, we consider that allowing SMP obligation to expire automatically without a review of the market conditions might not necessarily be in the best interest of end users. Having also regard for the fact that, considering the use of voluntary undertakings for the supply and pricing of certain analogue and digital low bandwidth services, and provided BT complies with such undertakings, the remainder SMP obligations on BT will be limited to an obligation to provide 2 Mbit/s, a no undue discrimination obligation, and obligation to publish a reference offer, we consider that a better solution will be in the future to consider the dis-application of the remainder remedies if the circumstances emerge that would make them no longer appropriate or necessary. This also seems to be an appropriate solution in the light of BT's claims that it has now achieved replicability. The sunset clause will therefore not apply.

Price controls

- 8.391 One respondent suggested that the proposed price control for analogue services should be extended to include all low bandwidth retail leased lines, which are legacy services with little prospect of migration.
- 8.392 Ofcom points to the fact that it proposed to accept a voluntary undertaking on BT on the pricing of analogue services, and not to impose a price control. The option of a charge control was discussed in the assessment of the regulatory options, at paragraph 8.301 and following of the January 2008 consultation. We believe that our

assessment that voluntary undertakings represent a better option than formal price controls for this market is still valid.

Requirements of the energy industry

- 8.393 The ENA said that Ofcom's proposals for analogue and sub-2Mbit/s digital services went some way to addressing the energy utilities concerns about short term service continuity but was concerned about how the energy utilities requirements for low-bandwidth circuits with low-latency would be met in the medium to long term.
- 8.394 The ENA said that in order to meet the energy utilities requirements, Ofcom would need to require BT to supply leased lines conforming to the utilities technical requirements for at least 20 years.
- 8.395 The ENA were also concerned about recent rises in the price of BT Kilostream circuits and asked Ofcom to secure a voluntary agreement from BT not to raise prices above the RPI.
- 8.396 Given the pace of technological change in the leased line market, it would not be appropriate for Ofcom to place BT under a very long term requirement (such as the 20 year period suggested) to provide circuits to ENA technical specifications.
- 8.397 As discussed in the consultation, Ofcom considers that its proposals strike a balance between the aim of encouraging BT's investment in new, more efficient network infrastructure and the aim of ensuring continuity for retail customers such as the energy utilities.
- 8.398 Ofcom considers that the ENA's concerns about Kilostream prices would be adequately addressed by the voluntary undertakings given by BT on the pricing and supply of analogue and sub-2Mbit/sec digital services.

Review of proposals for remedies

- 8.399 The January 2008 consultation set out our proposals at paragraphs 8.338 to 8.357, and a summary has been provided in paragraphs 8.372 to 8.375 above. In the following paragraphs, we review our proposals having regard to all responses and representations received and all evidence available to us following the consultations of January and July 2008.
- 8.400 We then complete our review for this market by setting out our final decisions on the regulatory obligations that should apply to BT.

Aims of regulation and considerations in design of remedies

- 8.401 We set out our policy objectives in paragraphs 8.33 to 8.37 of the January 2008 consultation. Given that we have found in Section 7 that BT has SMP in this retail market, we consider that regulation should have the following aims in this market:
- to protect consumers from the exploitation of that SMP, for example to protect them from excessive prices; and
 - to promote competition in the retail market for analogue and low bandwidth digital TI leased lines.

- 8.402 In assessing the appropriateness of regulatory remedies Ofcom has particularly taken into account paragraphs 21 and 114 of the Commission's SMP Guidelines which state that NRAs must impose one or more appropriate SMP services conditions on a dominant provider, and that in the view of the Commission it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP.
- 8.403 We have also had regard to the requirements of Section 91 of the Act mentioned at paragraph 8.26 in this Section. We set out later in this sub Section our arguments in support of the passing of such test as referred to in Section 91(2) of the Act.
- 8.404 In considering what the appropriate remedies might be, we have taken into consideration Section 91(5) and (6) of the Act. Section 91(5) states that "*The SMP conditions authorised by this Section are conditions imposing on the dominant provider such regulatory controls as OFCOM may from time to time direct in relation to the provision by that provider of any public electronic communications service to the end-users of that service.*"
- 8.405 Further, Section 91(6) states that "*Where OFCOM set a condition which is authorised by this Section and imposes regulatory control on tariffs or other matters to which costs are relevant, they shall also set, and apply to the dominant provider, an SMP condition which requires him, to the extent that they consider it appropriate— (a) to use such cost accounting systems as may be determined by them; (b) to have the use of those systems audited annually by a qualified auditor; and (c) to publish an annual statement about compliance by the dominant provider with the obligations imposed by virtue of paragraph (a).*"
- 8.406 We have considered above the stakeholders comments in relation to our proposals for this market. After setting out our response to the issues raised, we consider that the arguments and evidence in support of our proposals has not changed. We have taken on board the comments in relation to the sunset clause proposal, and have modified our final decision accordingly.
- 8.407 We believe that the analysis of what precise remedies should apply as set out in 8.338 to 8.357 of the January 2008 consultation still applies. We review the justification for the remedies in the following paragraphs. In doing this, we have divided the specific conditions into the following four categories:
- obligation to supply;
 - requirement not to unduly discriminate;
 - cost orientation; and
 - requirement to publish a reference offer.

Obligation to supply

- 8.408 As discussed in paragraphs 8.314 to 8.322 of the January 2008 consultation, to further consumers' interests, we consider BT should continue to support the installed base of analogue and digital leased lines at speeds up to and including 2Mbit/s. BT should be obliged to supply existing and new 2Mbit/s services to third parties on reasonable request. The provision of analogue and sub-2Mbit/s services is addressed by the voluntary undertaking.

Requirement not to unduly discriminate

- 8.409 The 2003/04 Review imposed an obligation on BT not to discriminate unduly in the provision of low bandwidth retail leased lines, including analogue and digital circuits of speeds up to and including 8 Mbit/s. In this review, BT has been found to still have SMP in this market and, as outlined in the April 2006 replicability statement, Ofcom does not consider it possible at present for BT's competitors to replicate effectively BT's retail low bandwidth leased line services. The remedies currently applied in the wholesale market for low bandwidth TISBOs and trunk segments have not been sufficient to ensure that BT's competitors can compete effectively in the downstream retail market. In these circumstances, Ofcom considers it is still appropriate to require BT not to unduly discriminate in the provision of retail low bandwidth leased lines products.
- 8.410 Ofcom considers that application of a non discrimination condition should not prevent BT from setting geographically de-averaged tariffs i.e. charging different prices for retail leased lines at different locations (as it does currently for the Central London Zone (CLZ), provided that in doing so it does not discriminate between customers or have a material adverse effect on competition.
- 8.411 As discussed above, Ofcom proposes that, in applying the proposed condition, there should be a presumption that saw-tooth discounts are unduly discriminatory.

Cost orientation

- 8.412 In the 2003/04 Review, Ofcom was obliged by the provisions of the USD to consider whether it was appropriate to impose cost orientation for analogue and digital leased lines of speeds up to and including 2 Mbit/s.
- 8.413 At that time we concluded that this obligation should be imposed on BT, but that they should only come into effect if BT breached its voluntary undertaking on the pricing of analogue circuits. We have decided to adopt a similar approach in the present review.
- 8.414 Specifically, the cost orientation condition will require the costs of analogue circuits to be reasonably derived from the Long Run Incremental Costs of service provision, allowing an appropriate mark-up for the recovery of common costs and including an appropriate return on capital employed.
- 8.415 This condition would only come into effect if:
- BT breaches its voluntary undertaking for 2008-10 on the pricing of analogue circuits; or
 - BT and Ofcom fail to reach agreement on a voluntary undertaking to apply in 2010-2012.
- 8.416 Ofcom does not consider it necessary to apply a cost orientation requirement to low bandwidth digital circuits at bandwidths up to and including 2Mbit/s, because we have already set a cost orientation obligation for the wholesale inputs used in their provision, and we are consulting separately on a charge control. We, therefore, consider that the regulation set at the wholesale level will be sufficient to allow Ofcom to perform its duties under Section 4 of the Act. Further retail regulation in this particular respect is, thus, not required.

- 8.417 Ofcom also believes that it would be disproportionate to apply a cost orientation requirement to 8Mbit/s circuits in the retail market, as very few of these circuits remain in service.

Requirement to publish a reference offer (setting out prices, terms and conditions) and same day price notification

- 8.418 Currently BT is subject to an obligation to publish prices, terms and conditions, and to notify changes to those. This obligation was required by the USD provisions for the Minimum Set of Leased Lines, which have now been withdrawn.
- 8.419 The publication provision has had an important role in the regulation of BT's activities in this market because it has provided transparency over pricing. In conjunction with the non-discrimination obligation, the effect has been to prevent BT from bundling low bandwidth leased lines together with other, non-SMP, services and from offering bespoke prices in order to secure business contracts against competition from other CPs.
- 8.420 The issues related to bundling and bespoke pricing were considered in detail in Ofcom's April 2006 statement on Replicability. Ofcom's conclusion at that time was that, until BT's retail services are effectively replicable by its competitors, the current restrictions on bundling and bespoke pricing should remain. BT's low bandwidth leased line services were not considered replicable at that time for a variety of reasons set out in the statement.
- 8.421 Since the April 2006 statement, we understand that BT has made progress in addressing some of the barriers to replicability identified by Ofcom, but that a number of issues have still to be resolved. In these circumstances, it would be premature to consult on whether replicability has now been achieved, and whether the SMP regulations which apply in this market should therefore be relaxed.
- 8.422 Ofcom's intention is to return to this issue as and when BT has presented evidence that all of the issues identified in the replicability statement have been resolved. If our initial review of the evidence suggests that BT's services may now be replicable, we will then consult on whether replicability has been achieved, and whether the regulations should therefore be relaxed.
- 8.423 For the present, however, and in view of the continued SMP position of BT in this market, Ofcom considers that the current publication requirements should continue to apply.

Conclusions

- 8.424 Having considered all responses to the consultations, and having reviewed all evidence available to us, we think that both the assessment of the most appropriate policy option and that of the appropriate remedies as set out in the January 2008 consultation remain appropriate. A summary of that assessment has been provided at paragraph 8.408 and following in this Section.
- 8.425 In setting out the appropriate obligations that will apply to BT, we have had regard for the requirements of the Act, and, in particular, Sections 45-50 and 87-92, which set out the regulatory obligations that Ofcom can impose if it finds that any undertaking has SMP. Sections 87-92 of the Act implement Articles 9 to 13 of the Access directive and Articles 17 to 19 of the Universal Service Directive.

- 8.426 We consider therefore that it is appropriate for Ofcom to impose the proposed obligations discussed at paragraph 8.372 and following in this Section for the reasons discussed at paragraphs 8.408 and following of this Section.
- 8.427 Using the powers conferred upon Ofcom under Sections 87 and 88, Ofcom has therefore decided to impose the following obligations on BT in the market for retail analogue and low bandwidth digital leased lines in the UK, excluding the Hull area:
- **Obligation to provide:** BT should be required to supply existing and new 2 Mbit/s retail low bandwidth leased lines to third parties on reasonable request. The supply of analogue and low bandwidth digital up to 2 Mbit/s should be addressed through a voluntary undertaking, as referred to below;
 - **No undue discrimination:** For all analogue and digital services at speeds up to and including 8 Mbit/s, a requirement not to unduly discriminate; and
 - **Obligation to publish a Reference offer:** For all analogue and digital services of speed up to and including 2 Mbit/s, a requirement to publish prices, terms and conditions, and to notify on the same day of entering into force any changes to those prices terms and conditions.
- 8.428 In addition, we also accept the following voluntary undertakings from BT¹⁰⁶:
- that it will continue to supply new analogue retail circuits until 1 January 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying platform is closed at an earlier date;
 - that it will continue to supply new sub-2Mbit/s retail circuits until 1 January 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying wholesale products are withdrawn from new supply at an earlier date;
 - that it will not increase its prices for analogue services more quickly than the rate of inflation (RPI-0%) for a period two years following the publication of the Business Connectivity Market Review Statement i.e. from 2008 to 2010; and
 - that it will commit to a further two-year cap, the level of which would be agreed with Ofcom prior to 2011.
- 8.429 We proposed that a conditional cost orientation obligation in relation to the price of analogue services should apply to BT if it would fail to adhere to its pricing commitment, or if BT and Ofcom should fail to reach agreement on the two-year cap for 2012. The cost orientation condition would require BT charges for analogue circuits to be derived from LRIC, plus a reasonable contribution to fixed common costs.

Communications Act tests

Introduction

- 8.430 It is our view that the regulatory obligations we are imposing on BT comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as

¹⁰⁶ Annex 9 presents the letter with the voluntary undertakings Ofcom has received from BT.

suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on BT, how we believe it meets the appropriate legal tests under Section 47(2) of the Act. Finally, We set out how we believe the cost orientation obligation we are imposing on BT meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

- 8.431 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. This implements Article 8 of the Access Directive.
- 8.432 Having considered all responses to the consultations and all evidence available to us, we have identified in Section 7 BT as having SMP in this market. In the light of the assessment of the costs and benefits of addressing the SMP through the remedies considered earlier in this Section, we have concluded that BT shall be subject to the obligations set out at paragraph 1.72 and following in this Section.
- 8.433 For the reasons set out in paragraphs 8.338 to 8.407 of the January 2008 consultation, and reviewed at paragraph 8.408 and following in this Section, we believe it is appropriate to impose such conditions on BT in relation to the objective we have set out to achieve in this review for the market for retail analogue and low digital bandwidth leased lines in the UK. In particular, in relation to the promotion of greater competition in the downstream retail market, which, we consider, would bring substantial benefits to end users by increasing their access to a competitive choice of prices and providers.
- 8.434 Finally, when considering what should be the appropriate remedies, we have had regard, as indicated in paragraph 8.109 of this Section, to a set of Guidelines from Oftel/Ofcom which identify a range of appropriate remedies that can be imposed when there is a finding of SMP in an electronic communications market.

Reliance on Competition Law alone not sufficient

- 8.435 Ofcom considers that ex ante retail regulation provides a more efficient means of securing effective competition in the retail market, as against the option of solely relying on the application of ex post competition law.
- 8.436 If the proposed SMP retail obligations were to be removed, there is a very real risk that BT would restrict competition in the retail market through price discrimination i.e. discounting where competition is strong and increasing prices where competition is weak. It is also possible that BT would cease to provide some legacy services in the retail market (such as analogue leased lines) prematurely, as discussed in paragraphs 8.314 to 8.322 of the January 2008 consultation. Absent ex ante regulatory intervention, there is a real risk that BT's conduct would depart substantially and persistently from that which would be desirable. A further consideration in the case of analogue services is that there is no ex ante wholesale remedy for these services (i.e. these services are not provided to other Communications Providers on a wholesale basis by BT). While analogue users currently have the ability to switch to retail digital leased line services and so benefit from competition based on wholesale digital remedies, the discussion above makes clear that digital services themselves are not completely effective yet. Replicability

should therefore also benefit analogue users, who will in any event have migrated to these services by 2012.

- 8.437 Because it is almost certain that such conduct would harm consumers and the competitive process, Ofcom considers that it is more efficient to prohibit this conduct via ex ante regulation rather than to rely on an ex post regime which determines after the fact whether particular conduct is unacceptable. An ex ante approach is likely to create greater specification in advance, and is less costly to interpret and apply. Given its relative ease of administration and application, ex ante regulation will tend to encourage greater compliance. Equally, because of its greater clarity, ex ante regulation will mean that BT is likely to be deterred from engaging in behaviour that is prohibited by regulation.

Tests under Section 47(2) of the Act

- 8.438 We set out in details in the table below how we think each remedy passes the relevant Communications Act tests. In particular, how we believe each obligation we are imposing on BT meets the tests set out in Section 47(2) of the Act, according to which each obligation must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

Table 8.17: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on BT as a result of it having SMP in the market for retail analogue and low bandwidth digital leased lines in the UK excluding the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to supply 2 Mbit/s</i>			
The obligation is objectively justifiable as, in the absence of this condition, BT might refuse to supply analogue and low bandwidth digital (TI) leased lines in order to force suppliers to migrate to other BT services (notably AI leased lines). It	The obligation does not discriminate unduly as it applies only to operators which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, exploit customers by refusing to supply.	The obligation is proportionate since BT is not obliged to supply if the request is unreasonable and because the obligation does not apply to 8Mbit/s leased lines, or to the supply of new analogue and sub 2Mbit/s traditional interface digital circuits. It only requires BT to	The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.

<p>could do so because it has a very high share of the market and indeed there are no alternative suppliers of analogue leased lines. This would not be in the interests of citizens and consumers. In some cases, consumers could be forced to incur significant expense in migrating to new products whose characteristics may not fully meet their requirements.</p>		<p>maintain supply to existing customers who would be disadvantaged if supply ceased. In addition, Ofcom does not consider that other operators will install competing facilities to undermine BT's SMP. It is also the case that wholesale remedies have not been fully effective in removing BT's retail market power (there is moreover, no wholesale analogue product). BT is however in the process of addressing shortcomings in its wholesale remedies and we will consider dis-application of retail remedies when circumstances mean they are no longer needed.</p>	
<p><i>Non discrimination</i></p>			
<p>The requirement is justified because otherwise BT would be able to distort competition by discriminating against particular groups of retail customers, e.g. through charging high prices where competition is weak and lower prices where it is stronger. It also ensures that BT does not abuse its SMP position by charging excessive prices, imposing unfair terms or offering inadequate quality of service to particular groups of customers. The requirement therefore promotes competition and furthers the interests of consumers.</p>	<p>The requirement does not discriminate unduly as it applies only to operators which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, exploit customers and distort competition by setting discriminatory prices, terms or conditions.</p>	<p>The requirement is proportionate in that only discrimination which is unduly is prohibited and because it is the least onerous obligation required to address this particular risk of harm to competition. In addition, Ofcom does not consider that other operators will install competing facilities to undermine BT's SMP. It is also the case that wholesale remedies have not been fully effective in removing BT's retail market power (there is moreover, no wholesale analogue product). BT is however in the process of addressing shortcomings in its wholesale remedies and we will consider dis-application of retail remedies when circumstances mean</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>

		they are no longer needed.	
<i>Cost orientation</i>			
<p>The requirement is justified because, in the absence of this condition, BT might set charges at excessively high or anti-competitively low levels. If charges did not reflect the costs of the resources used, customer choices would be distorted and inefficient allocation of resources would result. The risk of excessive pricing is particularly high for analogue services, for which no wholesale equivalent exists, and for which BT is in many cases the only supplier.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition and exploit customers by setting charges which are not based on costs.</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a reasonable return on investment, the cost orientation condition allows BT's charges to be proportionate to the extent of BT's investment in the provision of the relevant services. In addition, the obligation is conditional and will only apply if BT fails to adhere to its voluntary pricing commitment, or if BT and Ofcom should fail to reach agreement on the two-year cap to apply in 2011/12. BT has committed that it will not increase its prices for analogue services more quickly than the rate of inflation (RPI-0%) for a period two years following the publication of the LLMR statement i.e. from 2008 to 2010; and that it will commit to a further two-year cap, the level of which would be agreed with Ofcom prior to 2011</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<i>Obligation to publish a reference offer</i>			
<p>These obligations are justified in that they provide certainty to operators and prevent BT withholding information from customers and competitors, or misusing information in a way which could harm competition. In addition, they facilitate Ofcom's</p>	<p>The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, exploit customers and distort competition by withholding or misusing information.</p>	<p>The obligations are proportionate as the information which BT is obliged to publish is necessary to prevent it from using bundling or bespoke (hidden) discounts in a way which could harm competition. This is necessary because wholesale remedies have not been fully effective in removing BT's retail market power (there is moreover, no wholesale</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<p>monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.</p>		<p>analogue product). BT is however in the process of addressing shortcomings in its wholesale remedies and we will consider dis-application of retail remedies when circumstances mean they are no longer needed. The transparency obligations therefore support the other conditions imposed to address BT's SMP in this market. Without this information, OCPs could be unable to compete fairly with BT.</p>	
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Test under Section 88 of the Act

8.439 In paragraph 8.412 and following, we have reviewed the proposal to impose a conditional cost orientation obligation on BT in relation to analogue circuits which would only come into effect should BT fail to adhere to its voluntary undertakings on the pricing of analogue circuits.

8.440 Section 88 of the Act, which implements Article 13 of the Access Directive, requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and
- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and confer the greatest possible benefits on end-users.

8.441 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:

- So fix and maintain some or all of its prices at an excessively high level, or
- So impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.

8.442 As discussed in Section 7, where we assessed SMP in this market, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion in relation to analogue circuits. In Section 7 we have found that BT could potentially be earning high returns from these services. We think therefore that without an obligation to orient prices to costs, BT could, given its scale and scope advantages, afford to price above cost, which would result in higher prices for end users, given the reliance of the market on BT for analogue circuits. Given that the dominant provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions ex Section 88(3).

8.443 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest

possible benefits on the end-users of public electronic communications services. We set out why we think this condition is appropriate in paragraph 8.412 earlier in this Section.

8.444 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:

- promotes efficiency, by promoting cost based pricing for analogue circuits; and
- confers the greatest possible benefits on the end-users by ensuring that BT does not abuse its market power and sets unreasonable charges and conditions of supply for these services.

Test under Section 91 of the Act

8.445 As required by Section 91 (2) of the Act, Ofcom is satisfied that the remedies imposed for the relevant wholesale market of low bandwidth TISBOs, which is upstream of the retail market for analogue and low bandwidth digital leased lines, do not sufficiently enable Ofcom fully to perform its duties under Section 4 of the Act.

8.446 In paragraph 8.302 to 8.304 of the January 2008 consultation, when considering whether the option of no regulation would be warranted for this market, we set out to explain why, in our view, wholesale remedies would not be enough to allow Ofcom to perform its duties and, in particular, to promote end users interests in this market. In particular, as the SMP analysis has shown, BT has a position of entrenched dominance in this market, with a persistently high market share which has increased since the last market review. In addition, we do not consider that the wholesale remedies applied in the related upstream market have been sufficiently effective to warrant deregulation of the retail market, as highlighted by our assessment of BT's compliance with the April 2006 Replicability Statement, as reviewed in paragraph 8.380 and following in this Section.

8.447 If the existing SMP obligations were to be removed, there is a risk that BT would be able to use its market position to restrict competition in the retail market through price discrimination in the retail market, discounting where competition is strong and increasing prices where competition is weak. It is also possible that BT would cease to provide some of the legacy services in this market (such as analogue leased lines) prematurely, in order to force customers to migrate to newer services (particularly AI services). Outcomes of this sort would not be in the interests of citizens and consumers, and we therefore consider that the regulatory obligations discussed above are appropriate for this market.

Interconnection and accommodation services relating to BT's provision of services in the wholesale TISBOs, AISBOs and trunk markets

Summary of proposals

8.448 In paragraphs 8.69 to 8.93 of the January 2008 consultation we set out the rationale for considering the imposition of obligations in relation to interconnection and accommodation services alongside the other SMP service conditions imposed in those markets where we found SMP. We reviewed the services involved, and we considered how the proposed obligations would meet the relevant Communications Act tests.

8.449 We concluded by proposing that BT should be subject to the obligation to provide the following interconnection services:

- In Span Handover (ISH);
- Customer Sited Handover (CSH); and
- In building Handover (IBH).

8.450 Ofcom further proposed that BT should be required to provide accommodation within its local exchange buildings in support of disaggregated AISBO and TISBO leased line products and that the availability of such space should be on non-discriminatory, transparent and cost-oriented terms.

8.451 Paragraph 8.93 of the January 2008 consultation discussed of how we considered the proposed remedies met the test set out in Section 47 (2) of the Act.

Responses to the consultations and Ofcom's response

Clarity on proposed remedies

8.452 BT commented on Ofcom's proposed interconnection remedies in the low bandwidth AISBO market. They expressed concern over the terminology used, which they felt was more consistent with SDH products that fall within the TISBO market. They requested that Ofcom clarify the definition.

8.453 Ofcom has clarified the terminology in the foregoing and does not believe it is inappropriate to apply terminology used for SDH handover products used in TISBO markets to handover products used in AISBO markets given that in each case the handover products perform the same function: namely to provide an interconnection link between BT's network and another communications provider's network for the purposes of conveying business connectivity traffic. On the contrary Ofcom believes that the re-use of existing terms aids understanding and reduces ambiguity.

Charge controls

8.454 Two CPs and UKCTA responded in support of the inclusion of handover and accommodation services within charge controls. BT opposed the inclusion in the charge controls, arguing that it is already taking action that will help to address the relevant competition concerns.

8.455 We consider that the risk of anti competitive behaviour through charging high prices for interconnection services is very material, given the reliance of the OCPs on BT's interconnection services to link up their networks with BT's network. We also note that such services were included in the current charge controls, and the rationale for the inclusion of such services has not changed since the 2003/04 Review.

8.456 We therefore consider that, in principle, these services should be considered in the charge controls, the form and scope of which is being considered in a separate consultation published at the same time as this Statement.

Demand for a single co-location product

8.457 A significant number of CPs and UKCTA requested that a single accommodation product be made available on the grounds that separate space products create

inefficiencies. They also advocated the introduction of a complementary space product that would allow a CP to terminate BT's access products in the CP's own exchange site. One CP expressed general dissatisfaction with current co-location issues.

- 8.458 Ofcom believes that the availability of regulated accommodation products is crucial to the roll out of disaggregated access and backhaul products. Since the January 2008 consultation, BT has designed and commercialised new accommodation products, Access Locate and Access Locale Plus, in support of disaggregated AISBO products. We consider this product to be the one subject to regulation as a result of the SMP finding in the low bandwidth AISBO market, and we are consulting separately on the opportunity to charge control these services.
- 8.459 On 7 October 2007 Ofcom published a Statement entitled *Variations to BT's Undertakings under the Enterprise Act 2002 in respect of BT's NGN, Space and Power and OSS separation*¹⁰⁷. The Statement addressed OCPs concerns in relation to a more flexible use of LLU space, as well as addressing other issues relating to the provision of such co location space. In particular, it commits Openreach to consult on the development of a more flexible co-mingling product to allow products other than just LLU to use this space.

Equivalence of Input on co-location

- 8.460 UKCTA and one CP noted that BT does not buy the same interconnection and accommodation products that other communication providers buy, and suggested that accommodation should be provided on an Equivalence of Input (EoI) basis.
- 8.461 With respect to this issue, Ofcom's Statement of October 2007 referred to above includes a set of variations to the Undertakings to provide for the equivalent allocation of space and power by Openreach to communications providers and other parts of BT, in addition to establishing additional obligations on BT to follow clear and transparent guidelines in making space available.

Review of the assessment of regulatory options

Introduction

- 8.462 The Commission has not identified a separate market for handover and accommodation services in support of leased lines in its Recommendation. However, paragraph 3 of Section 3.3 of the explanatory memorandum to the first edition of the Commission's Recommendation states that:

"In dealing with lack of effective competition in an identified market, it may be necessary to impose several obligations to achieve an overall solution. For instance, it may often be the case that adjacent or related remedies are applied to technical areas as part of the overall obligation that addresses SMP on the analysed market. If specific remedies are thought to be necessary in a specific narrow technical area, it is not necessary or appropriate to identify each technical area as a relevant market in order to place obligations in that area."

- 8.463 This builds upon and reflects the intention of the Community legislator as expressed in Article 12 of the Access and Interconnection Directive (2002/19/EC) which states

¹⁰⁷ http://www.ofcom.gov.uk/consult/condocs/variations_bt/statement/

that operators may be required “to provide co-location” (Art. 12 (1) (g)) and/or “to interconnect networks or network facilities” (Art. 12 (1) (i)), where such operators are found to have SMP in a relevant market.

8.464 Ofcom has concluded in Section 7 that BT has SMP in the following wholesale markets in the UK excluding the Hull Area:

- wholesale low bandwidth TISBO (up to and including 8Mbit/s);
- wholesale high bandwidth TISBO in the CELA (above 8Mbit/s up to and including 34/45Mbit/s);
- wholesale very high bandwidth 155 Mbit/s TISBO in the CELA;
- wholesale low bandwidth AISBO (up to and including 1 Gbit/s); and
- wholesale trunk segments.

8.465 Ofcom considers it necessary and appropriate to impose certain SMP obligations in relation to products and/or services in these markets in order to remedy the problems identified.

8.466 However, Ofcom is of the view that such obligations and their likely consequences are not sufficient to address fully the problems in the markets identified. Therefore, Ofcom considers that in order to ensure that regulation in these markets is effective, it is necessary to consider whether additional obligations are required in relation to interconnection and accommodation services. In the following paragraphs, we set out why we believe that the SMP conditions applying to BT in those wholesale markets where it has been found to have SMP should extend to interconnection and accommodation services as described in this Section.

Review of rationale and services involved

8.467 The rationale for requiring BT to offer certain interconnection and accommodation services in relation to wholesale markets where it has SMP was discussed at paragraphs 8.73 to 8.76 of the January 2008 consultation, and, having considered the responses to the consultation and all the available evidence, we consider that it has not changed.

8.468 With respect to the services involved, we have considered the respondents’ comments, and have amended our original proposals to account for them. In particular, we no longer propose to oblige BT to provide IBH services in wholesale TISBO markets. The remaining of this sub Section discusses the details of the services involved.

8.469 A Point of Connection (POC) is the point at which another communications provider’s network interconnects with BT’s network. The relevant services provided at a POC can broadly be divided into equipment and links. Equipment is provided at a POC in the form of multiplexers or terminal equipment which are used for the aggregation, disaggregation and termination of partial circuits ready for onward transmission. Links are circuits which link the equipment of two interconnecting communications providers in order to allow transmission of traffic between the networks of these two communications providers.

8.470 BT currently provides the following broad types of POC equipment and links:

- Customer-sited handover (CSH): BT provides a point of handover at the site of the interconnecting communications provider. In order to do so, BT has to extend its network out to the point of handover and provide a CSH link along with CSH POC equipment. CSH is provided in support of TISBO products; and
- In-span handover (ISH): BT and the interconnecting communications provider build out their networks to a handover point located between their premises. The handover point is close to the BT exchange and therefore most of the build is the responsibility of the interconnecting communications provider. BT provides the part of the ISH link running from the handover point to its POC, along with ISH equipment at the POC, as well as ISH extension services. ISH is provided in support of TISBO products.

8.471 CSH does not involve building out to BT exchanges and the significant costs of doing so. Therefore, it is the normal mode of handover for a new communications provider or where a handover link is expected to carry a limited volume of traffic. ISH is the preferred method of handover between two communications providers who have reasonably extensive network infrastructure. An interconnecting CP will aim to handover as close as possible to BT, in order to minimise the charges payable to BT.

8.472 For products sold in the wholesale market for AISBO, handover is part of the access obligation, and is currently provided via a 'local end' between the local serving exchange nearest to the communications provider's Point of Presence (PoP) and the PoP. Each handover link is provided on a circuit by circuit basis, i.e. there is no aggregation as there is for TISBO products.

8.473 This is likely to change in future with AISBO products based on Ethernet Backhaul Direct (EBD), where the service will be carried via a Bulk Transport Link (BTL) in a manner similar to CSH for TISBO. There is no equivalent to ISH for AISBO.

8.474 However, unlike with TISBO products, there is an option for a CP to provide the handover directly within the exchange building. Similarly, it is expected that when TISBO disaggregated products such as TILLAP/TILLBP are made available it will be possible to handover this traffic also directly within the exchange building. In this document this is termed 'In-building Handover' or IBH. Handover options are summarised below.

Table 8.18 Handover options for wholesale markets for TISBO and AISBO

		CSH	ISH	'IBH'
TISBO	(PPC-type)	✓	✓	✗
	(TILLAP/TILLBP)	✓	✗	✓
AISBO		✓	✗	✓

8.475 In addition to the handover products described above BT also provides a product in support of accommodation services called Cablelink. Cablelink has both internal and external variants. The internal variant allows a communications provider to connect two remote licensed areas of the BT exchange building (i.e. two separate areas in which the communications provider has installed its equipment) or to connect equipment in the communications provider's licensed area to a pre-existing fibre entering the exchange building via the cable chamber. The external variant allows a communications provider's external fibre cable to be pulled into the exchange

building by BT and routed to the communications provider's licensed area. Cablelink is not a handover product as such as it does not interconnect BT equipment with the communications provider's POP for the purposes of carrying TISBO or AISBO traffic. Cablelink is therefore not considered further.

8.476 No respondent indicated a strong preference for the availability of IBH in markets for PPC-type services within TISBO markets. Having considered the comments received by respondents, in particular BT, Ofcom has concluded that an obligation to provide TISBO IBH would be disproportionate at this time given that:

- there is not expected to be significant further build of SDH networks and CPs are unlikely to want to incur the cost of migrating existing CSH or ISH to IBH where possible; and
- disaggregated TISBO products are not yet available.

Conclusions

8.477 Ofcom has therefore decided that the BT must continue to make available the existing TISBO handover products in relation to those TISBO wholesale markets where it has been found to have SMP:

- ISH products, including ISH extension; and
- CSH products.

8.478 Ofcom also requires BT to make available accommodation products in support of disaggregated AISBO and, in the future, TISBO products. Ofcom believes that the proposed Openreach Ethernet accommodation products (currently Access Locate and Access Locate Plus), rather than Netlocate, are the most appropriate products for this purpose.

8.479 In the market for low bandwidth wholesale AISBO, BT must make available an In Building Handover (IBH) product. We are not mandating BT to offer such product in support of disaggregated TISBO services at this stage, given that the scope and definition of disaggregated TISBO products to be made available by BT is yet to be agreed upon between BT and industry. However, once these products are available, BT should make available some form of IBH in relation to disaggregated TISBO products available.

Remedies

8.480 The remedies that will apply to these products have been set out in the review of regulatory options and appropriate remedies for each of the markets where BT has been found to have SMP. The discussions earlier in this section on the why the remedies proposed for each SMP market pass the tests in the Act are also applicable to the obligations related to interconnection and accommodation services.

SLAs/SLGs regime to apply to BT in regulated TISBO, AISBO and trunk segments' markets

8.481 Ofcom has concluded in Section 7 that BT has SMP in the following wholesale markets in the UK excluding the Hull Area:

- wholesale low bandwidth TISBO (up to and including 8Mbit/s);

- wholesale high bandwidth TISBO in the CELA (above 8Mbit/s up to and including 34/45Mbit/s);
- wholesale very high bandwidth 155 Mbit/s TISBO in the CELA;
- wholesale low bandwidth AISBO (up to and including 1 Gbit/s); and
- wholesale trunk segments.

8.482 As a consequence of BT's control of wholesale infrastructure in these markets, CPs depend on BT for the provision of wholesale services which are able to support efficient and reliable end-user services. The effect of delayed provision or repair of service could directly affect CPs' relationships with their end-users and therefore their service level commitments.

8.483 We think it is important that the contractual arrangements in place for the wholesale products OCPs buy from BT in those markets where it has been found to have SMP are such that:

- They incentivise the efficient provision of reliable services to BT's wholesale customers;
- They set out fair and reasonable compensation payments for delays in delivery and repair of such services; and
- They allow BT and its wholesale customers to monitor effectively the performance of BT's provision and repair of wholesale regulated products.

8.484 In order to achieve these objectives, contractual arrangements need to include:

- A set of Service Level Agreements (SLAs) which reflects the commercial SLAs provided to end users of Alternative Interface and Traditional Interface leased lines;
- A set of Service Level Guarantees (SLGs) which set out fair and reasonable compensations for delays in delivery and repair of such services; and
- A set of Key Performance Indicators (KPIs) which set out clearly a series of key metric for measuring performance of BT's provision of such services.

8.485 In this sub Section, we first consider the contractual arrangements for wholesale Ethernet products, and then move on to consider the contractual arrangements for PPCs.

The SLAs/SLGs and KPIs for wholesale Ethernet products

8.486 With respect to AISBO products, the 2003/04 Review did not impose a specific set of SLAs/SLGs and KPIs on BT. Since the creation of Openreach, the industry has been working with the OTA2 to address performance issues relating to these products, but failed to reach agreement on an appropriate SLG regime to apply to wholesale Ethernet services provided by Openreach.

The Ofcom review of Openreach's SLGs

- 8.487 On 20 March 2008, we published the statement entitled *Service level guarantees: incentivising performance*¹⁰⁸ (the SLG statement). The SLG statement explained that Openreach's customers considered that the SLG arrangements for Ethernet services, LLU and WLR were not providing Openreach with a sufficient financial incentive to maintain a consistent level of service because, amongst other things, of the arrangements for claiming compensation. They suggested that these arrangements were onerous and that this acted as a disincentive to making any claims. Many did not bother.
- 8.488 The effect of this was that Openreach was only paying out a fraction of the amount that it would have paid out if compensation had been paid proactively in the event of a breach of the SLG. We agreed with Communications Providers that the SLG arrangements were not in themselves providing Openreach with a sufficient financial incentive to maintain a consistent level of service performance.
- 8.489 We suggested that there were a number of general principles which should apply to SLG arrangements to make them effective and provide appropriate financial incentives to improve service performance. These general principles were that SLGs arrangements should:
- when agreed service levels are not met, make provision for compensation to be made based on a pre-estimate of an average CP's loss;
 - ensure that CPs are entitled to make a claim for additional loss;
 - pay compensation on a per event basis;
 - ensure that compensation payments are made proactively; and
 - allow for efficient cost recovery.
- 8.490 We explained that SLG regimes which abided by these general principles would be likely to be fair and reasonable in accordance with the relevant SMP services conditions. We therefore assessed the SLGs against these general principles and directed Openreach to amend them where they were inconsistent with the general principles.
- 8.491 The general principles were not, however, designed specifically to address the deficiencies with Openreach's SLGs for the relevant products and, as such, we stated that they could apply equally to other products and services.

SLAs and KPIs for wholesale Ethernet products

- 8.492 With respect to SLAs and KPIs for wholesale Ethernet products, Ofcom is aware that the industry is working on a new commercial framework that, among other things, is considering the most appropriate SLAs and KPIs for BT's regulated wholesale Ethernet services.
- 8.493 We therefore do not propose to issue detailed regulation in these areas at present. We will however follow the on-going discussions, particularly with the help of the

¹⁰⁸ http://www.ofcom.org.uk/media/news/2008/03/nr_20080320

OTA2, and retain the power to mandate specific requirements if satisfactory agreements are not reached.

The SLAs/SLGs and KPIs for PPCs

8.494 Currently, BT Wholesale's contracts for PPCs include SLAs/SLGs that set out its performance targets and the compensation payments that it will make should it fail to meet those targets. These provisions were mandated by the 2003/04 Review, and are detailed in the PPC Direction currently applying to BT. Under the PPC Direction Ofcom also mandated a set of KPIs in relation to such services.

The SLAs and KPIs for PPCs

8.495 When we started this review, all CPs, including BT Wholesale, considered that the regime in place had not been effective. While the SLAs were broadly considered adequate, the parties considered that KPIs had failed to allow accurate measurement of BT's Wholesale performance and, therefore, identify correctly when compensation payments should be made.

8.496 To that end, Ofcom asked the OTA2 to work with BT Wholesale and its customers to agree a new set of KPIs. This work was completed during 2008. A new set of KPIs has been agreed and, after a consultation between BT Wholesale and its customers, put in place, that in the view of all parties involved addresses the deficiencies of the current KPIs.

8.497 Given the agreement on these new KPIs, we no longer consider it necessary to mandate detailed KPIs for PPCs contracts. The new KPIs enable the CPs to view the level of service provided against an industry aggregate performance in near real time¹⁰⁹.

SLGs for PPCs

8.498 In addition, the same issues that were brought forward as concerns in relation to the SLG arrangements for Openreach's access product portfolio exist in the equivalent arrangements for PPCs. Given that we have found that BT has SMP in the provision of PPCs, we are imposing various SMP services conditions including a SMP condition which requires BT to provide access to PPCs on fair and reasonable terms.

8.499 The current regime does not provide for a common approach across all wholesale leased lines services. In particular, there are currently differences in SLGs between PPCs and Ethernet products which we consider are not justified. We propose to address this issue by amending the PPC Direction, to provide a greater degree of consistency between the SLG arrangements for Ethernet and PPC services.

Conclusions

8.500 Good performance of wholesale leased lines services provided in SMP markets is essential to ensure that end users have access to high quality competing services in

¹⁰⁹ These can be found at:

http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Ci_recruits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html

downstream markets. The current regime has failed to deliver improved performance on these services in the past few years, and has been the subject of continued work by the industry, Ofcom and the OTA2.

8.501 Respondents to the January 2008 and July 2008 consultation, particularly OCPs, agreed with us that changes were required, particularly to the SLGs for both wholesale Ethernet products and PPCs.

8.502 Having considered all the responses and all the evidence, we therefore have decided to:

- Adopt the approach to SLGs set out by Ofcom in the SLG Statement, with the Ethernet Direction to be re imposed under the new SMP Conditions for the market for low bandwidth AISBO, which are set out in Annex 8; and
- Apply the approach to SLGs which has been developed for wholesale Ethernet services to PPCs, by amending the PPC Direction to incorporate the relevant SLGs.

8.503 With respect to SLAs and KPIs for all regulated wholesale services, we believe the industry is better placed than Ofcom to agree a set of satisfactory indicators for the performance of these products. We have therefore decided not to regulate these contractual arrangements at this stage. However, we will monitor the development of the new contractual frameworks for both wholesale Ethernet and PPCs and, should industry fail to reach agreement, we will consider using our powers under the new SMP Conditions to regulate KPIs for those services.

Other ancillary services

8.504 In the responses to the January 2008 consultation, respondents raised issues regarding other ancillary products and services that BT provides in the wholesale markets for TISBO and AISBO. We discuss in the following paragraphs we discuss these concerns and how we think they can be addressed.

Excess construction charges

8.505 A number of OCPs have raised concerns over excess construction charges (ECCs) which are levied by BT whenever construction work is required in respect of new circuit provision. These issues fall broadly in three categories:

- transparency – OCPs are concerned that it is difficult to check the individual components of an ECC as they are not itemised on the invoice;
- frequency – a large number of orders (anecdotally, more than 90%) attract ECCs and OCPs have argued that since they are so common at least a proportion of them should be fixed and incorporated into the connection charge; and
- process – the point in the process at which ECCs are confirmed is relatively late in the retail sales cycle which leads to problems with customer expectation management.

8.506 The issue of transparency is related to the ability of a CP in receipt of an invoice to check that charges levied in respect of excess construction are both accurate and reasonable. Construction charges are not unique to BT and most, if not all, CPs will already purchase similar services in respect of their own build requirements and

can therefore readily check – if they are provided with an itemised invoice – that the amounts charged by BT are reasonable. In practice it is possible for a CP to check the individual components of an ECC by querying an online system provided by BT.

- 8.507 The issue of frequency may just be one of nomenclature and a failure on BT's part to fully communicate the change of policy in respect of served and un-served premises which it adopted some time ago. This change resulted in all non-standard construction charges being moved into 'excess' construction charges such that the connection charge only covers work which varies very little from site to site. Typically this involves pulling an existing fibre from the cable room to the location of the NTU and connecting the NTU to it. Ofcom does not in principle object to this approach and, in fact, believes that charging for such variable elements separately is likely to lead to better pricing transparency than would be possible if the standard connection charge incorporated a component to cover average construction charges. Ofcom would therefore urge BT to produce documentation which clearly states its policy in respect of the charging of construction activities for new provides and what charges are, and are not, included in the standard connection charge.
- 8.508 Of the three issues highlighted above process issues perhaps have the greatest potential to have an adverse effect on the sales activities of CPs in downstream markets. Currently, there is a significant delay between the provision of the retail quote to the customer and the confirmation of the wholesale charges which will actually apply. This confirmation is only provided once BT has conducted a site survey and identified any excess construction work required. The site survey can be considerably later than the point at which the retail quote was provided. This means that CPs must provide an initial quote based on incomplete information and carry the risk of having to return to the customer some time later with a significantly revised quote including construction charges which have been confirmed after the site survey.
- 8.509 The fact that BT passes construction charges straight through to the CP means there is currently little incentive on BT to either improve the quality of the initial desktop survey or reduce the time delay between initial desktop quote and site survey.
- 8.510 Since July 2008, BT has been working with industry through the *Ethernet Forum*, to address some of these issues. BT is putting in place measures through a "30/60/90 day plan" designed to address some of the industry concerns and implement the appropriate changes within a short period of time.
- 8.511 With respect to the issue of transparency, BT has taken so far the following steps:
- BT has shared now with OCPs their Planning Policy guidelines associated with ECCs¹¹⁰;
 - It is also changing its policy of providing maps of their network and planning to provide Ordnance Survey free of charge for some circuits;
 - It has shared details of the planning audit process with OCPs¹¹¹; and

¹¹⁰ The material can be found at:
http://www.openreach.co.uk/orpg/products/ethernet/downloads/ethernet_ecc_workshop300708_slides_final.pdf

¹¹¹ This material can be found
at:http://www.openreach.co.uk/orpg/products/ethernet/downloads/ethernet_service_products_forums_october_2008.zip

- It's working with industry representatives and the OTA2 with a view to publishing all relevant sections of the appropriate Openreach internal manual for fibre ECCs¹¹².

8.512 With respect to addressing the issues with the process, Openreach has agreed to provide a firm commitment on the value / price of ECC charges identified on WES, BES and WEES orders placed with them by the time they are able to give the Contractual Delivery Date (CDD). This change is particularly welcome for BT's customers as it will remove some areas of uncertainty on the final cost of a wholesale circuit that have been a cause for concern.

8.513 We welcome BT's actions to address some of the concerns with ECCs, and believe they should provide some comfort to OCPs. We will continue to follow the work done in this area by BT, the OTA2 and industry. We have no plans at this stage to mandate any particular regulation on ECCs, but will retain the power to do so under the new SMP conditions we are imposing on BT.

Novations and migrations

8.514 In its response to the January 2008 consultation UKCTA stated that it believed Ofcom should have proposed remedies in respect of efficient novation processes as it believes such processes are central to reducing the costs of switching for business customers.

8.515 Ofcom recognises that industry has had problems with retail novations in the past but we do not believe that this is something that can be adequately addressed through SMP regulations since effective mechanisms are dependent on all CPs agreeing to novations and not just BT. We also believe that this is an issue which is not necessarily related to market power but is a commercial and contractual issue since it affects products in all markets irrespective of whether any one CP has SMP in that market. We would therefore urge industry to work together to agree effective novation arrangements for retail contracts.

8.516 Within wholesale markets, however, the issue is somewhat different since frequently there is a need for a wholesale product provided by BT in a market in which it has SMP to be contractually moved from one CP to another in response to a change of supplier in the associated retail market. Ofcom does not believe that BT as a wholesale supplier with SMP should insist that such migrations are put in place via a cease and re-provide process. Ofcom acknowledges that BT has taken steps to provide such a migration process but notes that many CPs have stated that the process is not ideal. Ofcom would therefore urge BT to work with its customers to provide an effective and cost-oriented process for the migration of wholesale supply contracts between customers and without necessarily ceasing service to end users.

8.517 A further aspect of migrations is between products within the same SMP market, either to take advantage of new product launches or features or in order to change circuit capacity. We believe that in any product portfolio the processes for migrating between bandwidths and product variants are as important as the products themselves and we therefore believe that BT should look to launch appropriate migration products either at the same time or shortly thereafter.

¹¹² Some of this information is already published and can be found in the Excess Construction Charges - A Guide for BES WES & WEES published at:
http://www.openreach.co.uk/orpg/products/ethernet/downloads/excess_construction_charges_guide_issue1.pdf

Review of regulatory remedies - KCOM

8.518 In the January 2008 consultation, we asked the following questions in relation to our proposed remedies for markets where KCOM was found to have SMP:

Question 20: Do stakeholders agree with our assessment of the appropriate regulatory option and our proposed remedies for the wholesale TISBO markets in the Hull area? In particular, do you think Ofcom should accept Kingston's proposed voluntary undertaking not to increase the prices of its wholesale TISBO services by more than RPI+0% over the next four years?

Question 21: Do stakeholders agree with our assessment of the appropriate regulatory option and our proposed remedies for the wholesale AISBO markets in the Hull area?

8.519 In the July 2008 consultation, we further asked the following question in relation to the market for wholesale very high 155 Mbit/s TISBO in the Hull area, where we proposed to find KCOM to have SMP:

Question 11: Do stakeholders agree with our assessment of the appropriate regulatory option and our proposed remedies for the wholesale very high bandwidth 155 Mbit/s TISBO market in the Hull area?

8.520 We first set out below the current regulatory obligations applying to KCOM following the completion of the 2003/04 Review. Then, for the wholesale TISBO markets and low bandwidth AISBO market in Hull, where KCOM has been found to have SMP in Section 7, we present a summary of the proposals put forward in the January 2008 and July 2008 consultations. We then move on to discuss the responses received and provide Ofcom's response to the issues raised. Finally, we provide a review of the options assessment, the proposed remedies and our conclusions with respect to the appropriate remedies that should apply to KCOM.

8.521 As set out in Section 7, we have now revised our finding of SMP on KCOM in the market for high bandwidth AISBO, and propose to find that no undertaking has SMP in the provision of those services in the Hull area. Our revised proposals for this market in Hull are the subject of a public consultation until the 13 January 2009, and we invite stakeholders to provide their views and comments.

The existing regulatory obligations on KCOM

8.522 Under the 2003/04 Review Ofcom found KCOM to have SMP in the wholesale low and high bandwidth TISBO markets (i.e. speeds up to and including 155 Mbit/s), and the AISBO market at all speeds in the Hull area. As a result, we imposed the following obligations on KCOM in these markets:

- a general obligation to provide access on reasonable request;
- a requirement not to unduly discriminate;
- cost orientation and a cost accounting system;
- requirement to publish a reference offer; and

- requirement to notify technical information with 90 days notice.

Wholesale markets for low bandwidth, high bandwidth and very high bandwidth 155 Mbit/s TISBO in the Hull area

Summary of proposals

- 8.523 In paragraphs 8.370 to 8.391 of the January 2008 consultation we reviewed the regulatory options, which remedies should apply, and we considered the relevant Communications Act tests.
- 8.524 Following respondents comments to the January 2008 consultation, we reviewed our proposals for market definition. In particular, in the July 2008 consultation we proposed that different markets exist for 155 Mbit/s and 622 Mbit/s TISBO in the UK.
- 8.525 As a result of the revised proposals for market definition, we revised our SMP assessment and proposed remedies for the very high TISBO markets in the Hull area. In particular, we proposed that KCOM should be subject to regulatory obligations in the provisions of low, high, and very high 155 Mbit/s TISBO in the Hull area, but not in the provision of 622 Mbit/s TISBO, where we found KCOM not to have SMP.
- 8.526 In paragraphs 6.84 to 6.99 of the July 2008 consultation, we set out the discussion of regulatory options and remedies that should apply to KCOM in the provision of 155 Mbit/s TISBO in the Hull area.
- 8.527 Below we present a summary of the relevant regulatory options and remedies considered for those wholesale TISBO markets where in Section 7 we have found KCOM to have SMP.

Options assessment

- 8.528 The regulatory options considered were:
- No regulation;
 - Status quo;
 - Variations and additional measures, including accepting a voluntary undertaking from KCOM not to increase the prices of its low bandwidth, high bandwidth and very high bandwidth 155 Mbit/s TISBO services more quickly than the general rate of price inflation (RPI+0%) for a period of four years following publication of the statement which sets out the conclusions of this market review.
- 8.529 When we considered the potential impact on stakeholders, we considered that an approach based broadly on the existing regime, but with the addition of the proposed voluntary undertaking by KCOM, best met our objectives.
- 8.530 On the basis of our assessment, we concluded that the appropriate action was to maintain the existing regime with the addition of the voluntary undertaking.

Proposed Remedies

- 8.531 We proposed the following remedies:

- General access obligation to supply wholesale products upon request;
- No undue discrimination;
- Cost orientation;
- Requirement to publish a reference offer;
- Requirement to publish technical information; and
- Accepting KCOM's proposed voluntary undertaking from KCOM not to increase the prices of its low bandwidth, high bandwidth and very high bandwidth TISBO services more quickly than the general rate of price inflation (RPI+0%) for a period of four years following publication of the statement which sets out the conclusions of this market review.

8.532 Paragraph 8.408 of the January 2008 consultation and paragraph 6.99 of the July 2008 consultation set out how we thought the proposed remedies met the Communications Act tests.

Responses to the consultations and Ofcom's response

Regulation of wholesale TISBO markets

- 8.533 KCOM opposed the proposed wholesale regulations for TISBOs in Hull on the grounds that they are disproportionate, and because KCOM has not abused its significant market power so far.
- 8.534 In its response, KCOM has not provided new evidence against the SMP findings, and we have in the SMP assessment Section confirmed our initial finding of SMP. In the presence of SMP, as set out by Section 87(1) of the Act, Ofcom is required by the Act to impose appropriate remedies on the relevant undertakings. In discussing the appropriate level for remedies in the January 2008 consultation, Ofcom had regard to the issue of proportionality, and proposed to accept a voluntary undertaking from KCOM on the pricing of wholesale TISBO products at all bandwidths. We believe that our original proposals are proportionate, and that our proposed approach minimises the regulatory burden on KCOM while addressing the competitive concerns arising from its SMP position in these markets.

Review of proposals for remedies

- 8.535 In this sub Section we summarise the key arguments in support of our conclusions on the appropriate remedies. Our fuller analysis of the remedies was set out in paragraphs 8.392 to 8.407 of the January 2008 consultation and paragraph 6.94 of the July 2008 consultation.
- 8.536 We set out our policy objectives in paragraphs 8.33 to 8.37 of the January 2008 consultation. Given we have found in Section 7 that KCOM has SMP in these market, we consider that regulation should have the following aims in this market:
- to protect wholesale customers and, via the retail market, consumers, from the exploitation of that SMP, for example to protect them from excessive prices;
 - to promote competition in the retail market by ensuring that SMP in this wholesale market is not leveraged into the retail market; and

- to promote competition in this wholesale market.

8.537 The promotion of effective competition may be a more realistic aim for the higher bandwidth TISBO markets than for the low bandwidth TISBO market, because of the greater value of high bandwidth circuits.

Wholesale Access

8.538 Without an obligation to provide wholesale services to rival CPs, KCOM is likely to have an incentive to refuse to provide access and to leverage its market power into the downstream retail market. In order to meet the objective of promoting competition in the retail market, an obligation to provide network access is required.

Prohibition of undue discrimination

8.539 The obligation to provide wholesale access on its own would be insufficient to promote retail competition. Without further regulation, KCOM would be able to give preferential treatment to its own downstream divisions. In particular, it could engage in price and non-price discrimination practices that could push rivals out of the downstream market, and restrict competition in the downstream market. We therefore consider the prohibition of undue discrimination is justified to prevent KCOM from distorting competition by favouring its own retail business.

Cost orientation

8.540 The most obvious way in which KCOM could abuse its SMP position is through excessively high charges. Some restriction on the level of charges is therefore a natural remedy to consider. We proposed in the January 2008 consultation to accept KCOM voluntary undertaking not to increase prices more quickly than the general rate of inflation (RPI+0%) for its low bandwidth, high bandwidth and very high bandwidth TISBO services. This appears to us to be a proportionate way to protect consumers' interests, given that a charge control would impose a substantial increase in the regulatory burden on KCOM and we confirm this approach.

8.541 To protect consumers we consider it appropriate to retain the existing cost orientation and accounting separation conditions but to stipulate that they should only come into effect if KCOM fails to adhere to its voluntary undertakings on prices for TISBO services.

Requirement to publish a reference offer and technical information

8.542 Without obligations to publish a reference offer and technical information, it would be difficult to detect anti competitive behaviour such as price and non-price discrimination. Because of KCOM's market power there would be a high risk that it could engage in such behaviour. Ex ante transparency obligations on a reference offer and technical information make it easier for other CPs to compete with KCOM in the retail market on an equal footing. Ofcom therefore considers it appropriate to impose these transparency obligations on KCOM.

Conclusions

8.543 Having considered all responses to the consultations, and having reviewed all evidence available to us, we conclude that the most appropriate remedies are as set out in the January and July 2008 consultations. In reaching our decision we have taken account of the considerations described in paragraph 8.109 above. The

reasons for our conclusion were set out in paragraphs 8.392 to 8.406 of the January 2008 consultation.

8.544 Ofcom has therefore decided that KCOM should be subject to the following obligations in the markets for wholesale low, high and very high bandwidth 155 Mbit/s TISBOs:

- a general access obligation to supply wholesale products upon request;
- a requirement not to unduly discriminate;
- a requirement to publish a reference offer; and
- a requirement to publish technical information.

8.545 In addition, we have accepted KCOM's voluntary undertaking not to increase prices for its low, high and very high bandwidth 155 Mbit/s TISBO products by more than RPI+0% for four years from the entering into force of the new regulatory framework for leased lines. If KCOM were to fail to adhere to its voluntary undertaking, cost orientation and accounting separation conditions would come into effect. The undertaking is reproduced in Annex 9.

Communications Act tests

Introduction

8.546 It is our view that the regulatory obligations we are imposing on KCOM comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on KCOM, how we believe it meets the appropriate legal tests under Section 47(2) of the Act. Finally, We set out how we believe the cost orientation obligation we are imposing on KCOM meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

8.547 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. This implements Article 8 of the Access Directive.

8.548 Having considered all responses to the consultations and all evidence available to us, we have identified in Section 7 KCOM as having SMP in this market. For the reasons set out in paragraphs 8.283 to 8.295 of the January 2008 consultation, and referred to in paragraph 8.335 above, we believe it is appropriate to impose such conditions on KCOM in relation to the objective we have set out to achieve in this review for the trunk segments market in the UK. In particular, in relation to the promotion of greater competition in the downstream retail market, which, we consider, would bring substantial benefits to end users by increasing their access to a competitive choice of prices and providers.

8.549 Finally, when considering what should be the appropriate remedies, we have had regard to the considerations set out in paragraph 8.109 of this Section.

Reliance on Competition Law alone not sufficient

8.550 In paragraphs 8.111 to 8.113 in this Section we set out the general case for ex ante regulation in relation to the markets for terminating segments in the UK. These considerations apply equally to the wholesale TISBO markets in the Hull area. In particular, we have found that KCOM has a market share above 50% in all three markets, similar to those found in the last review, which points to KCOM’s entrenched dominance in these markets. Such a persistent SMP position leads to a high risk of a firm setting excessive wholesale prices that, if not remedied through ex ante regulation, could lead to higher prices for end users. The Commission latest Recommendation on Relevant Markets recognises that this risk exist and justifies ex ante intervention for the markets for terminating segments of leased lines, which in the UK includes the wholesale TISBO markets where KCOM has been found to have SMP.

Tests under Section 47(2) of the Act

8.551 We set out in details in the table below how we think each remedy passes the relevant Communications Act tests. In particular, how we believe each obligation we are imposing on KCOM meets the tests set out in Section 47(2) of the Act, according to which each obligation must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

Table 8.19: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on KCOM as a result of it having SMP in the market for wholesale low, high and very high bandwidth TISBO the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to provide access</i>			
The obligation is objectively justifiable as, in the absence of this condition, KCOM might refuse to supply TISBO terminating segments, which would prevent	The obligation does not discriminate unduly as it applies only to an operator which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, distort competition by denying	The obligation is proportionate since KCOM is not required to provide access if the request is unreasonable and because Ofcom does not consider that other operators will install competing facilities to an extent to	The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.

<p>effective competition in the retail market. By ensuring that OCPs can gain access to KCOM's wholesale trunk segments services on fair and reasonable terms, it will enable OCPs to compete in the retail leased lines market. By enabling OCPs to compete fairly with KCOM, it puts pressure on KCOM to reduce costs and so promotes efficiency, confers the greatest possible benefits on end-users and promotes effective and sustainable competition.</p>	<p>access on fair and reasonable terms.</p>	<p>undermine KCOM's SMP. In the absence of Ex-ante regulation, entry barriers and KCOM's SMP mean that competition might never become established.</p>	
<p><i>Non discrimination</i></p>			
<p>The requirement is justified because otherwise KCOM, as a vertically integrated operator, would be able to distort competition by discriminating against its rivals to the benefit of its own (downstream) divisions, e.g. through charging other operators higher prices than it charges KCOM retail division. It also ensures that KCOM does not abuse its SMP position by charging excessive prices or offering inadequate quality of service to particular groups of customer and, via the retail market, to end users. The requirement therefore promotes competition and</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by discriminating against competitors.</p>	<p>The requirement is proportionate in that only discrimination which is unduly is prohibited and because it is the least onerous obligation required to address this particular risk of harm to competition. Ex ante regulation is more effective than ex post competition law where, as here, entry barriers and SMP mean that otherwise, effective competition might never become established.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>

<p>further the interests of consumers.</p>			
<p><i>Cost orientation</i></p>			
<p>The requirement is justified because, given its SMP position, KCOM might set individual charges at excessively high or anti-competitively low levels.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by setting charges which are not based on costs.</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a reasonable return on investment, the cost orientation condition allows KCOM's charges to be proportionate to the extent of KCOM's investment in the provision of the relevant services. Ex ante regulation is necessary for the reasons set out above.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<p><i>Transparency obligations</i></p>			
<p>These obligations are justified in that they provide certainty to operators and prevent KCOM withholding information from customers and competitors, or misusing information in a way which could harm competition. In addition, they facilitate Ofcom's monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.</p>	<p>The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, exploit customers and distort competition by withholding or misusing information.</p>	<p>The obligations are proportionate as the information which KCOM is obliged to publish is necessary to enable OCPs to make effective use of the network access which KCOM is also required to provide. The transparency obligations therefore support the other conditions imposed to address KCOM's SMP in this market. Without this information, OCPs could be unable to compete fairly with KCOM.</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>

Test under Section 88 of the Act

8.552 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and

- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and conferring the greatest possible benefits on end-users.
- 8.553 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:
- So fix and maintain some or all of its prices at an excessively high level, or
 - So impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.
- 8.554 As discussed in Section 7, where we assessed SMP in these markets, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion. In particular, we have identified the risk that KCOM, given its market power, could engage in price discrimination between its downstream arms and its competitors when granting access to its network. We think therefore that without an obligation to orient prices to costs, KCOM could, given its scale and scope advantages, afford to price below cost to deter further entry and push competitors out of the market (i.e. margin squeeze). It could also price above cost, which would result in higher prices for end users in retail markets, given the reliance of the market on KCOM's wholesale access services. Given that the dominant provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions ex Section 88(3).
- 8.555 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. We set out why we think this condition is appropriate in paragraph 8.164 of the January 2008 consultation.
- 8.556 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:
- promotes efficiency, by promoting cost based pricing and efficient market entry; and
 - confers the greatest possible benefits on the end-users by ensuring that providers competing for customers in the retail market are not exploited by KCOM setting unreasonable conditions in the wholesale market.
- 8.557 The conditional cost orientation condition that Ofcom is imposing would require, if KCOM fails to adhere to the voluntary undertakings given to Ofcom, that, unless Ofcom directs otherwise, KCOM shall set all charges such that they are reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs. If a charge were set below the long run incremental cost of supply, then some customers may buy that product when they would not have been prepared to pay the full long run incremental costs of providing it. This is likely to be inefficient and result in a loss for society as a whole. Moreover, such a low charge is likely to be inconsistent with promoting sustainable wholesale competition, because it could mean that an equally efficient competitor is prevented from entering the market because it is unable to recover its incremental costs. By promoting efficiency and ensuring that competition is not distorted, requiring charges not to be below long run incremental costs will tend to confer the greatest benefits on end users. If a charge

were above long run incremental costs plus an appropriate mark up, then it is higher than it needs to be in order to produce the service and this is unlikely to be in consumers' interests. If there were particular circumstances that mean that a charge set on the basis of long run incremental costs plus an appropriate mark up would not be appropriate, and would be detrimental to consumers' interests, then the condition allows Ofcom to direct that the charges are not required to be set on that basis.

Account taken of the ERG Wholesale Leased Lines Common Position

8.558 In accordance with ERG's Statement of 12 October 2006¹¹³, while ERG Common Positions are not binding, ERG members must take the utmost account of them. Table 8.19 below summarises how Ofcom has taken into account the ERG WLL CP in proposing the regulatory remedies for this market.

Table 8.20 Account taken of the ERG Wholesale Leased Lines Common Position

Objective of remedy	Account taken by Ofcom
Assurance of supply	The requirement to provide Network Access on reasonable request should provide competitors with reasonable certainty of ongoing supply of wholesale leased lines in order to give them confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms and conditions in advance should provide clarity of terms and conditions of wholesale leased lines.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and technical information along with the obligation to provide access products upon request should ensure that the technical parameters of access are reasonable.
Fair and coherent access pricing	The price commitments offered by KCOM should ensure that pricing of wholesale SMP TISBO services in Hull is fair and reasonable in view of the future declining demand conditions for those products.
Reasonable quality of access products	The requirement not to unduly discriminate, together with the Discrimination Guidelines and the requirement to publish a Reference Offer should ensure that access products are of reasonable quality.

¹¹³ ERG(06)51.

Wholesale market for low bandwidth AISBO in the Hull area

Introduction

8.559 As discussed in Section 7, we are now proposing to find no undertakings has SMP in the high bandwidth AISBO market in Hull. The revised SMP finding is being subject to a public consultation until the 13 January 2009.

8.560 Below we conclude the review of the low bandwidth AISBO market in Hull. We first summarise our proposals, then consider the respondents views and provide our response to the points raised. Finally, having regard for all the responses and available evidence, we set out the conclusions of our review.

8.561 We also set out how we consider the remedies we are imposing on KCOM comply with the legal tests set out in the Act, and how, in identifying the appropriate remedies, we have taken account of the ERG Wholesale Leased Lines Common position.

Summary of January 2008 proposals

8.562 In paragraphs 8.411 to 8.430 of the January 2008 consultation we reviewed the regulatory options, which remedies should apply, and we considered the relevant Communications Act tests for the low and high wholesale AISBO markets in Hull, following a proposed finding of SMP on KCOM in the markets for low and high bandwidth AISBO in the Hull area.

Options assessment

8.563 The regulatory options considered were:

- No regulation;
- Status quo; and
- Variations and additional measures, including introducing a mechanism that would link the price of wholesale AISBO services in the Hull area to a suitable benchmark for competitive prices. A candidate for such a benchmark would be BT's wholesale AISBO prices. Differences between KCOM's charges and BT's would require an objective justification, related for example to the costs of supply. This benchmark would be taken into account in the event of a dispute relating to KCOM's charges for AISBO services, rather than used for ex ante regulation.

8.564 When we considered the potential impact on stakeholders, we considered that the third option, comprising variations and additional measures, best met our objectives.

8.565 On the basis of our assessment, we concluded that the appropriate action was to introduce the proposed variations and additional measures.

Proposed Remedies

8.566 We proposed that KCOM should be subject to the following SMP obligations:

- General access obligation to supply wholesale products upon request;

- No undue discrimination;
- Cost orientation;
- A requirement to publish a reference offer; and
- A requirement to publish technical information.

8.567 In addition, we set out at paragraphs 8.421 to 8.426 of the January 2008 consultation our proposed intention to consider some form of control over KCOM's prices for wholesale AISBO services, and, in particular, a benchmarking mechanism that would link the price of KCOM's services to that of BT.

Responses to the consultations and Ofcom's response

Regulation of wholesale AISBOs

8.568 KCOM opposed the proposed regulation for wholesale AISBOs in Hull, including the adoption of a price benchmark for its wholesale prices. Instead, it offered the opportunity to discuss voluntary undertakings on the pricing of wholesale AISBO services.

8.569 With respect to the imposition of remedies in relation to low bandwidth AISBO in the Hull area, where we have found KCOM to have SMP, Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. We do not think therefore that the option of no regulation is available to us. We discuss further below how we consider that the remedies we are imposing on KCOM meet the legal tests set out in the Act, including how reliance on Competition Law alone is not appropriate for this market.

8.570 We have engaged on KCOM on the opportunity of revising our original proposals and considered the option of voluntary undertakings would achieve the same objective but with a reduced burden on KCOM. KCOM has produced a set of proposals for the future of pricing of AISBO products in Hull which will be subject to consultation in the Leased Lines Charge Controls consultation document to be published at the same time as this Statement.

Review of proposals for remedies

8.571 In this sub Section we summarise the key arguments in support of our conclusions on the appropriate remedies. Our fuller analysis of the remedies was set out in paragraphs 8.431 to 8.438 of the January 2008 consultation.

8.572 We set out our policy objectives in paragraphs 8.33 to 8.37 of the January 2008 consultation. Given we have found in Section 7 that KCOM has SMP in these market, we consider that regulation should have the following aims in this market:

- to protect wholesale customers and, via the retail market, consumers from the exploitation of that SMP, for example to protect them from excessive prices;
- to promote competition in the retail market by ensuring that SMP in this wholesale market is not leveraged into the retail market; and
- to promote competition in this wholesale market.

Wholesale Access

8.573 Without an obligation to provide wholesale services to rival CPs, KCOM is likely to have an incentive to refuse to provide access and leverage its market power into the downstream retail market. In order to meet the objective of promoting competition in the retail market, an obligation to provide network access is required.

Prohibition of undue discrimination

8.574 The obligation to provide wholesale access on its own would be insufficient to promote retail competition. Without further regulation, KCOM would be able to give preferential treatment to its own downstream divisions. In particular, it could engage in price and non-price discrimination practices that could push rivals out of the downstream market, and restrict competition in the downstream market. We therefore consider the prohibition of undue discriminate is justified to prevent KCOM from distorting competition by favouring its own retail business.

Cost orientation

8.575 The most obvious way in which KCOM could abuse its SMP position is through excessively high charges. Some restriction on the level of charges is therefore appropriate.

Requirement to publish a reference offer and technical information

8.576 Without transparency obligations such as the one to publish a reference offer and technical information, it would be difficult to detect anti competitive behaviour such as price and non price discrimination. Because of KCOM's market power there would be a high risk that it could engage in such behaviour. Ex ante transparency obligations on a reference offer and technical information make it easier for other CPs to compete with KCOM in the retail market on an equal footing. Ofcom therefore considers it appropriate to impose these transparency obligations on KCOM.

Conclusions

8.577 Having considered all responses to the consultations, and having reviewed all evidence available to us, we conclude that the most appropriate remedies are as set out in the January and July 2008 consultations. In reaching our decision we have taken account of the considerations described in paragraph 8.109 above. The reasons for our conclusion were set out in paragraphs 8.431 to 8.438 of the January 2008 consultation.

8.578 Ofcom has therefore decided that KCOM should be subject to the following obligations in the market for low bandwidth AISBO in the Hull area:

- a general access obligation to supply wholesale products upon request;
- a requirement not to unduly discriminate;
- a requirement to publish a reference offer; and
- a requirement to publish technical information.

- 8.579 In addition, we are consulting in the separate Leased Lines Charge Controls consultation on the opportunity to accept KCOM's proposed voluntary undertakings on the price of wholesale low bandwidth AISBO in the Hull area.

Communications Act tests

Introduction

- 8.580 It is our view that the regulatory obligations we are imposing on KCOM comply with the requirements set out in the Act. In the paragraphs that follow, we first consider how we believe they comply with Section 87(1) of the Act. Secondly, we consider, as suggested by recital 27 of the Framework Directive, whether competition law remedies alone would suffice to address the concerns and competition problems we have identified, and give our reasons why we think it would not. We then set out, individually for each of the obligations we are imposing on KCOM, how we believe it meets the appropriate legal tests under Section 47(2) of the Act. Finally, We set out how we believe the cost orientation obligation we are imposing on KCOM meets the further test set out in Section 88 of the Act.

SMP Conditions are appropriate

- 8.581 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in the market reviewed, it must set such SMP conditions as it considers appropriate and as authorised by the Act. This implements Article 8 of the Access Directive.
- 8.582 Having considered all responses to the consultations and all evidence available to us, we have identified in Section 7 KCOM as having SMP in these wholesale low bandwidth AISBO market. For the reasons set out in paragraphs 8.431 to 8.438 of the January 2008 consultation, and reviewed in paragraph 8.574 above, we believe it is appropriate to impose such conditions on KCOM in relation to the objective we have set out to achieve in this review. In particular, in relation to the promotion of greater competition in the downstream retail market, which, we consider, would bring substantial benefits to end users by increasing their access to a competitive choice of prices and providers.
- 8.583 Finally, when considering what should be the appropriate remedies, we have had regard to the considerations set out in paragraph 8.109 of this Section.

Reliance on Competition Law alone not sufficient

- 8.584 For broadly the same reasons set out at paragraph 8.550 above when discussing the inadequacy of Competition Law alone for wholesale markets where we had found BT to have SMP, we consider that reliance on Competition Law alone is not sufficient in this market.

Tests under Section 47(2) of the Act

- 8.585 We set out in details in the table below how we think each remedy passes the relevant Communications Act tests. In particular, how we believe each obligation we are imposing on KCOM meets the tests set out in Section 47(2) of the Act, according to which each obligation must be:
- objectively justifiable in relation to the networks, services or facilities to which it relates;

- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

Table 8.21: Summary of Ofcom’s reasons for believing that the test of Section 47 (2) of the Act is met for the obligations imposed on KCOM as a result of it having SMP in the market for low bandwidth AISBO in the Hull area

<i>Is it objectively justifiable in relation to the networks, services and facilities which it relates?</i>	<i>Is it such as not to discriminate unduly against particular persons or a particular description of persons?</i>	<i>Is it proportionate to what the condition is intended to achieve?</i>	<i>In relation to what it is intended to achieve, is it transparent?</i>
<i>Obligation to provide access</i>			
The obligation is objectively justifiable as, in the absence of this condition, KCOM might refuse to supply AISBO terminating segments, which would prevent effective competition in the retail market. By ensuring that OCPs can gain access to KCOM's wholesale services on fair and reasonable terms, it will enable OCPs to compete in the retail leased lines market. By enabling OCPs to compete fairly with KCOM, it puts pressure on KCOM to reduce costs and so promotes efficiency, confers the greatest possible benefits on end-users and promotes effective and sustainable competition.	The obligation does not discriminate unduly as it applies only to an operator which have SMP in the relevant market and which therefore would be able to, and would have an incentive to, distort competition by denying access on fair and reasonable terms.	The obligation is proportionate since KCOM is not required to provide access if the request is unreasonable and because Ofcom does not consider that other operators will install competing facilities to an extent to undermine KCOM's SMP. In the absence of Ex-ante regulation, entry barriers and KCOM's SMP mean that competition might never become established.	The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.
<i>Non discrimination</i>			
The requirement is justified because otherwise KCOM, as a vertically	The requirement does not discriminate unduly as it applies only to operators who, by	The requirement is proportionate in that only discrimination which is unduly is prohibited and	The requirement is transparent since the condition has been drafted for maximum

<p>integrated operator, would be able to distort competition by discriminating against its rivals to the benefit of its own (downstream) divisions, e.g. through charging other operators higher prices than it charges KCOM retail division. It also ensures that KCOM does not abuse its SMP position by charging excessive prices or offering inadequate quality of service to particular groups of customer and, via the retail market, to end users. The requirement therefore promotes competition and furthers the interests of consumers.</p>	<p>possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by discriminating against competitors.</p>	<p>because it is the least onerous obligation required to address this particular risk of harm to competition. Ex ante regulation is more effective than ex post competition law where, as here, entry barriers and SMP mean that otherwise, effective competition might never become established.</p>	<p>clarity and because the purpose of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<p><i>Cost orientation</i></p>			
<p>The requirement is justified because, given its SMP position, KCOM might set individual charges at excessively high or anti-competitively low levels.</p>	<p>The requirement does not discriminate unduly as it applies only to operators who, by possessing SMP in the relevant market, would be able to, and would have an incentive to, distort competition by setting charges which are not based on costs.</p>	<p>The requirement is proportionate because, by taking into account costs, including an appropriate contribution to the recovery of common costs and a reasonable return on investment, the cost orientation condition allows KCOM's charges to be proportionate to the extent of KCOM's investment in the provision of the relevant services. Ex ante regulation is necessary for the reasons set out above.</p>	<p>The requirement is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.</p>
<p><i>Transparency obligations</i></p>			
<p>These obligations are justified in that they provide certainty to operators and prevent KCOM withholding</p>	<p>The obligations do not discriminate unduly as they apply only to operators who, by possessing SMP in the relevant market, would be able to, and would</p>	<p>The obligations are proportionate as the information which KCOM is obliged to publish is necessary to enable OCPs to make effective use of the network</p>	<p>The obligation is transparent since the condition has been drafted for maximum clarity and because the purpose and meaning of the</p>

<p>information from customers and competitors, or misusing information in a way which could harm competition. In addition, they facilitate Ofcom's monitoring of compliance with the other obligations, notably the obligation not to unduly discriminate.</p>	<p>have an incentive to, exploit customers and distort competition by withholding or misusing information.</p>	<p>access which KCOM is also required to provide. The transparency obligations therefore support the other conditions imposed to address KCOM's SMP in this market. Without this information, OCPs could be unable to compete fairly with KCOM.</p>	<p>obligation and the reasons for imposing it are clearly explained in this document.</p>
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Test under Section 88 of the Act

8.586 Section 88 of the Act, which implements Article 13 of the Access Directive, further requires that, when considering a cost orientation obligation, we are able to demonstrate that:

- there is a risk of adverse effect from price distortion; and
- that the cost orientation obligation is appropriate to: promote efficiency, promote sustainable competition, and conferring the greatest possible benefits on end-users.

8.587 Paragraph (3) of Section 88 further argues that there is a relevant risk of adverse effects arising from price distortion if the dominant provider might:

- So fix and maintain some or all of its prices at an excessively high level, or
- So impose a price squeeze, as to have adverse consequences for end-users of public electronic communications services.

8.588 As discussed in Section 7, where we assessed SMP in these markets, it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion. In particular, we have identified the risk that KCOM, given its market power, could engage in price discrimination between its downstream arms and its competitors when granting access to its network. We think therefore that without an obligation to orient prices to costs, KCOM could, given its scale and scope advantages, afford to price below cost to deter further entry and push competitors out of the market (i.e. margin squeeze). It could also price above cost, which would result in higher prices for end users in retail markets, given the reliance of the market on KCOM's wholesale access services. Given that the dominant provider might engage in such practices, we think that we have identified a relevant risk of adverse effects arising from price distortions ex Section 88(3).

8.589 It also appears that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. We set out why we think this condition is appropriate in paragraph 8.164 of the January 2008 consultation.

8.590 As required by Section 88(1)(b) of the Act, Ofcom considers that this obligation fulfils the following requirements:

- promotes efficiency, by promoting cost based pricing and efficient market entry; and
- confers the greatest possible benefits on the end-users by ensuring that providers competing for customers in the retail market are not exploited by KCOM setting unreasonable conditions in the wholesale market.

8.591 The cost orientation condition that Ofcom is imposing will require that, unless Ofcom directs otherwise, KCOM shall set all charges such that they are reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs. If a charge were set below the long run incremental cost of supply, then some customers may buy that product when they would not have been prepared to pay the full long run incremental costs of providing it. This is likely to be inefficient and result in a loss for society as a whole. Moreover, such a low charge is likely to be inconsistent with promoting sustainable wholesale competition, because it could mean that an equally efficient competitor is prevented from entering the market because it is unable to recover its incremental costs. By promoting efficiency and ensuring that competition is not distorted, requiring charges not to be below long run incremental costs will tend to confer the greatest benefits on end users. If a charge were above long run incremental costs plus an appropriate mark up, then it is higher than it needs to be in order to produce the service and this is unlikely to be in consumers' interests. If there were particular circumstances that mean that a charge set on the basis of long run incremental costs plus an appropriate mark up would not be appropriate, and would be detrimental to consumers' interests, then the condition allows Ofcom to direct that the charges are not required to be set on that basis.

Account taken of the ERG Wholesale Leased Lines Common Position

8.592 In accordance with ERG's Statement of 12 October 2006¹¹⁴, while ERG Common Positions are not binding, ERG members must take the utmost account of them. Table 8.19 below summarises how Ofcom has taken into account the ERG WLL CP in proposing the regulatory remedies for this market.

Table 8.22 Account taken of the ERG Wholesale Leased Lines Common Position

Objective of remedy	Account taken by Ofcom
Assurance of supply	The requirement to provide Network Access on reasonable request should provide competitors with reasonable certainty of ongoing supply of wholesale leased lines in order to give them confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-

¹¹⁴ ERG(06)51.

	mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms and conditions in advance should provide clarity of terms and conditions of wholesale leased lines.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and technical information along with the obligation to provide access products upon request should ensure that the technical parameters of access are reasonable.
Fair and coherent access pricing	The price commitments offered by KCOM should ensure that pricing of wholesale SMP TISBO services in Hull is fair and reasonable in view of the future declining demand conditions for those products.
Reasonable quality of access products	The requirement not to unduly discriminate, together with the Discrimination Guidelines and the requirement to publish a Reference Offer should ensure that access products are of reasonable quality.

Interconnection services relating to KCOM's provision of services in the wholesale TISBO and AISBO markets

8.593 We have not received any comments on the proposal not to regulate these services in the TISBO markets where KCOM has been found to have SMP. We therefore confirm that Ofcom will continue not to regulate such services, and will rely on the general obligation on KCOM to provide access in wholesale TISBO markets in Hull. This general obligation will provide requesting parties with a regulatory safeguard against KCOM's market power in negotiating for such products and services, should the demand for them arise.

Cost accounting and accounting separation obligations to apply to BT and KCOM

Summary of proposals

8.594 In paragraphs 8.440 to 8.453 of the January 2008 consultation we reviewed the cost accounting and accounting separation requirements that should apply to BT and KCOM in the markets where they have been found to have SMP. We present a summary below.

Existing framework

8.595 Under the existing framework, BT and KCOM are required to produce a range of outputs, the purpose of which is to support compliance with no undue discrimination and cost orientation obligations in SMP markets. Those outputs include the following:

8.596 Generic cost orientation & non-discrimination requirements:

- Preparation of a variety of financial statements;

- Preparation of extensive supporting documentation explaining how the financial statements have been put together;
- Provision of an independent assurance statement;
- Publication of most of the information; and
- Preparation of reconciliation statements;

8.597 Cost orientation specific requirements:

- Preparation of service level cost data compared to average charges
- Preparation of costs of network components used to deliver services
- Analysis of service cost stack by component

8.598 Non-discrimination specific requirements:

- Analysis of internal and external sales including volume data.

Proposals

8.599 Our proposals in this area were as follows:

- The current regulatory accounting framework should continue to be used for compliance reporting on the designated markets;
- We believe further reporting (to Ofcom only) on downstream activities which receive leased line charges as cost inputs is necessary, and intend to examine this issue further in a separate consultation;
- The weaknesses we have identified in the PPC transfer charging regime should be addressed by BT through improvements in the regulatory accounting system, which will be explained and consulted on in a separate consultation; and
- Cost accounting obligations in the retail market for low bandwidth TI circuits outside Hull and the wholesale markets for TISBOs in the Hull area should only apply in the event of a breach of the voluntary undertakings on pricing proposed in those markets by BT and KCOM respectively, as described above.

8.600 Paragraph 8.453 of the January 2008 consultation has a discussion of how we thought the proposed remedies met the Communications Act tests.

Review of our proposals and conclusions

8.601 We have received no comments from respondents on the proposed approach to cost accounting separation. We therefore consider that it is appropriate to implement our proposals in their original form.

8.602 Maintaining a “fit for purpose” reporting regime is essential and improvements to the reporting of services covered by the January 2008 consultation were incorporated in BT’s 2007/08 regulatory financial statements. Reference was made in the January 2008 consultation to the likelihood that further reporting changes would be needed

following completion of this review. However, BT's 2007/08 financial statements were still based on the previous market definitions and obligations.

8.603 We plan to review in detail BT's and KCOM's regulatory accounting obligations following publication of this statement. Where we believe changes are required then these will be subject to a separate consultation in advance of BT and KCOM publishing their 2008/09 regulatory financial statements in July 2009.

Opportunities to foster deeper level of competition in wholesale business markets

8.604 One of the issues considered in the course of this market review is whether Ofcom should review the market for dark fibre in the access for the purpose of promoting greater competition in wholesale leased lines markets.

8.605 We presented in Annex 10 to the January 2008 consultation a discussion of this issue, and invited stakeholders' to comment on the option of a market review for dark fibre in the access network, and in particular on the following related issues:

- benefits for consumers;
- nature of the access obligation;
- consistency with regulatory principles;
- compatibility with other regulations;
- impact on investment incentives; and
- pricing issues.

8.606 For a full discussion, see paragraphs 8.454 to 8.463 of the January 2008 consultation.

Review of responses to the January 2008 consultation

8.607 In the January 2008 consultation, we asked stakeholders the following question:

Question 22: Should Ofcom investigate further the case for introducing a dark fibre remedy by undertaking a market review of the relevant market? If such a review were to be undertaken, is it likely that BT or any other CP would be found to have SMP in that market? And if SMP were to be found, what would be the pros and cons of requiring the dominant provider to make dark fibre in the access network available to third parties?

8.608 Several stakeholders provided a response to this question, and there were wide-ranging views on the subject of a potential dark fibre review.

8.609 BT and three other respondents opposed any potential review of dark fibre. Some respondents were presently unconvinced of the merits of a dark fibre remedy and requested clarification before such a review is considered.

8.610 Several respondents however expressed support for a dark fibre review.

8.611 Ofcom has considered the responses received on this proposal, and believes that at this time it is not appropriate to further explore the opportunity for a dark fibre review for the purpose of improving competition in wholesale leased lines access markets. We set out below our arguments.

Discussion and Conclusions

8.612 In the January 2008 consultation, we asked stakeholders to comment on the issue of whether Ofcom should review the dark fibre market, with a view to mandating a dark fibre access product in case we found undertakings with SMP in the market. In particular, we asked stakeholders to come forward with evidence that access to deeper remedies would benefit competition, and, ultimately, end users.

8.613 The majority of stakeholders expressed support for a review of dark fibre. However, not all CPs could at this stage see the benefits of such a review. BT and three other respondents were opposed to such a review, or could not see the benefits at this stage.

8.614 In our view, the key issue to consider is not whether a dark fibre review and a potential dark fibre access remedy (Layer 1 remedy) would be good *per se*, but:

- i) whether it would bring in additional benefits compared with the current approach to wholesale business markets based on WESs, PPCs etc. (Layer 2 remedies); and
- ii) whether these mainly dynamic benefits would outweigh the largely static costs involved in providing services on the basis of dark fibre.

8.615 The table below summarizes the pros and cons of a dark fibre review at this stage based on the analysis presented in the consultation document and the responses received from stakeholders.

Table 8.23 Pros and cons of a dark fibre review for the purpose of promoting competition in wholesale leased lines access markets

PROS	CONS
Greater depth of competition: more control of infrastructure and upgrade plans for equipment; more control over maintenance & repair;	Lower breadth of competition i.e. fewer competitors
Leveraging of existing “unused” access fibre & ducting from BT (there is no clear evidence at present in support of this argument ¹¹⁵)	Disruption to market & working of remedies
Innovation	Benefits of access to deeper remedies in wholesale business markets uncertain
Better quality of service and better (and lower) pricing for wholesale products	Intrusive regulation, would not meet the support of BT and could impact BT’s implementation of the Undertakings
	There is no international experience at present in countries with comparable telecom markets showing how a dark fibre remedy might benefit competition

- 8.616 The most common arguments put forward by CPs in support of a dark fibre review were: better control of infrastructure, improved quality of service and better (and lower) pricing.
- 8.617 On the issue of control of infrastructure, we consider that OCPs would gain more control over the transmission layer infrastructure (i.e. the boxes that enable the transmission of data and/or voice traffic), but that the underlying infrastructure would still be under BT’s ultimate control. Given that BT has access at least to the same transmission equipment and lower prices than others because of its scale, it is not clear whether the economic benefits of controlling the transmission equipment would be significant.
- 8.618 On quality of service, Ofcom has already been working to improve BT’s service provision through the Openreach Ethernet portfolio SLAs/SLGs project, and we are adopting a similar approach for BT Wholesale’s products such as PPCs.
- 8.619 On better (and lower) pricing, the charge control project is planning to address OCPs concerns through considering a new set of charge controls, which would cover also the Openreach Ethernet portfolio.
- 8.620 With respect to the issue of depth vs. breadth of competition, because of the economies of scale and scope involved in purchasing the equipment and running it, it can be argued that such a review, in the event that it led to the introduction of a dark

¹¹⁵ Anecdotal evidence obtained from BT concerning the incidence of construction charges for new fibre-based wholesale products in the access (PPCs, WESs) points to BT having to dig and lay new fibre in 9 out of 10 cases. Even if this is not to be taken face value, it does not support the view that BT has an extensive “idle” access fibre infrastructure other than those already in use for fibre-based wholesale products.

fibre remedy, would only benefit a small number of the current competitors in this market with a risk of greatly reducing the breadth of competition in downstream markets.

- 8.621 While the greater scope for innovation was mentioned by most respondents as a key advantage of having a dark fibre remedy compared with the current set of remedies (PPCs, WESSs, BESs etc.), respondents did not provide any compelling arguments or evidence that explained what form such innovation would take, or, crucially, how any benefits would flow through to end users. In the absence of more compelling arguments in support of greater innovation, and considering the potentially disruptive and intrusive nature of a dark fibre remedy, we do not consider the case for proceeding with a review of the market for access dark fibre to be strong at this time.
- 8.622 It is also worth noting that the only major telecoms market in Europe where dark fibre in the access is available as an input, Sweden, has had a very specific set of conditions supporting the development of a dark fibre market: fuelled by public subsidies since the late '90s a market for dark fibre has emerged, characterized by local public/private infrastructure monopolies with an obligation to supply third party access. Crucially, the market for dark fibre pre dated the opening up of the incumbent's leased lines network. This experience is not therefore conclusive as to what effect the introduction of a dark fibre remedy might have on the market and competition in the presence of wholesale regulation.
- 8.623 Having considered stakeholders responses, and having evaluated their arguments, we feel that at this stage, a review of dark fibre for the purpose of promoting competition in wholesale leased lines access markets is not warranted. The improved competitive conditions that we believe should follow from the implementation of the new regulatory remedies for leased lines, as described in this Section, will address two of the main issues (pricing and quality of service) which have prompted some stakeholders to advocate a dark fibre review.
- 8.624 Our conclusions are strictly relevant to a dark fibre review for the purpose of promoting competition in downstream markets for leased lines, and are without prejudice to the possibility in the future for Ofcom to review the dark fibre market in the UK for reasons other than promoting competition in these markets.

Annex 1

Responding to this consultation

How to respond

- A1.1 Ofcom invites written views and comments on the reviewed SMP assessment in relation to the market for high bandwidth AISBO in the Hull area and the proposed finding of no SMP on KCOM. These are to be made **by 5pm on 13 January 2009**.
- A1.2 Ofcom strongly prefers to receive responses using the online web form at <http://www.ofcom.org.uk/consult/condocs/XXXX>, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.
- A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email business.connectivity.review@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.
- A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- Serafino Abate
4th Floor
Competition Division
Riverside House
2A Southwark Bridge Road
London SE1 9HA
- Fax: 020 7783 4559
- A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

- A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Serafino Abate on 020 7981 3333.

Confidentiality

- A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your

response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

- A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

Next steps

- A1.11 Following the end of the consultation period, Ofcom intends to publish a statement later in 2009.
- A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

- A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 2

Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about who we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

Consultation response cover sheet

- A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.
- A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.
- A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' Section of our website at www.ofcom.org.uk/consult/.
- A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing	<input type="checkbox"/>	Name/contact details/job title	<input type="checkbox"/>
Whole response	<input type="checkbox"/>	Organisation	<input type="checkbox"/>
Part of the response	<input type="checkbox"/>	If there is no separate annex, which parts?	

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name

Signed (if hard copy)

Annex 4

Consultation question

SMP assessment in the Hull area

Question 1: Do stakeholders agree with our revised proposal not to find any operator to have SMP in the wholesale high bandwidth AISBO markets in the Hull area?

Annex 5

List of respondents to the July 2008 consultation

- BT
- Cable & Wireless (C&W)
- COLT
- European Commission (EC)
- Mobile Broadband Network Limited (MBNL)
- UKCTA
- 2 respondents provided a confidential response.

Annex 6

Geographic analysis

Introduction

A6.1 In Sections 4 and 6 we have set out the conclusions of our geographic market analysis and subsequent geographic market definitions for the relevant retail and wholesale product markets respectively. In this annex we provide further details of our geographic analysis methodology. We begin by providing details of our analysis of service shares in the relevant retail markets before discussing our analysis of service shares in the wholesale markets. We then set out our approach to analysing network reach, which is a further key component of our geographic market analysis methodology.

Retail service share analysis

A6.2 We collected empirical data from BT and 22 Other Communications Providers (OCP). The retail market data gathered from operators included approximately 247,000 TI retail leased line records and approximately 48,000 AI retail leased line records. There are also 114,000 records that were subsequently considered to be outside the leased line markets defined by Ofcom.¹¹⁶

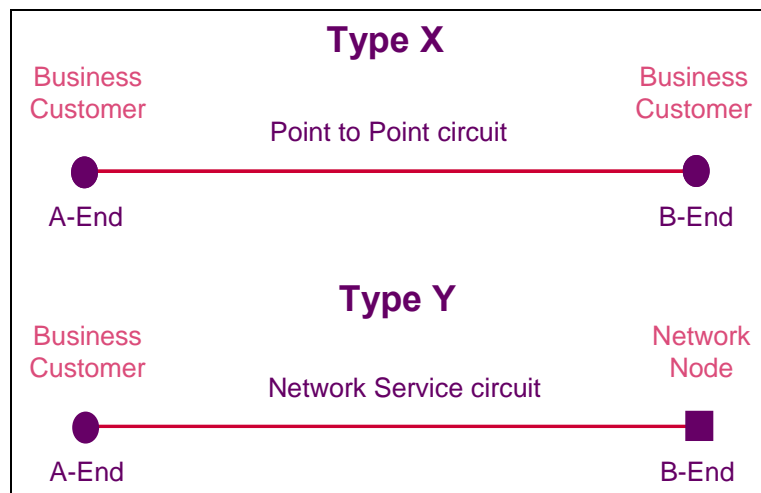
A6.3 This analysis looked at the retail service share at postal sector level.

A6.4 The output of the retail service share analysis shows the detailed breakdown of operators' shares of 'retail service ends' for each postal sector in the UK. A 'retail service end' is defined as the customer end point (i.e. customer site) served within a given leased line market.

A6.5 There are two main types of retail leased line services considered:

- Point-to-point retail leased line (Type X), which is a circuit that connects two business customer sites (i.e. both ends are business customers' ends); and
- Retail network services (Type Y), which is a circuit that connects a business customer into the operator's network node (i.e. one end is a network node)

¹¹⁶ These included circuits that are used to support PSTN telephone circuits, IP VPNs, ISDN circuits, Dark fibre services, ATM, Frame Relay and ADSL/Cable Modem circuits.

Figure A6.1: Retail leased line services

- A6.6 A point-to-point retail leased line (Type X) used to connect two business customer sites contributes two customer end-points to the total service end counts, while a leased line used to connect a business customer site to an operator's network would contribute one end-point to the total service end count.
- A6.7 Both these types of retail services can be provided using TI e.g. primarily based on SDH, or AI e.g. primarily based on Ethernet technologies.
- A6.8 Ofcom has so far considered the retail market definitions as shown in Table A6.1 below.

Table A6.1 – Retail market definition

	Market	Bandwidth Breaks	Type of Circuits
1	TI Low	Up to and including 2Mbps and 8Mbps	Analogue Digital SDH/PDH (PPCs) SDSL (symmetric IPStream/datastream)
2	TI High	Above 8Mbps up to and including 45Mbps	Digital SDH/PDH (PPCs)
3	TI very high 155Mbit/s	Above 45Mbps up to and including 155Mbit/s	Digital SDH/PDH (PPCs)
4	TI very high 622Mbit/s	Above 155Mbit/s	Digital SDH/PDH (PPCs)
5	AI Low	Up to and including 1Gbp/s	Ethernet circuits (WES/WEES)
6	AI High	Above 1Gbp/s	Ethernet circuits

			(WES/WEES)
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A6.9 The methodology to estimate the operator retail service shares consists of the following four steps:

- i) Data cleansing
- ii) Aggregation by postal sector
- iii) Uplift of data
- iv) BT retail service share calculation.

Step 1: Data cleansing

A6.10 The data submitted by the different operators from which we requested information was not consistent. This is because the way different operators capture and store data is different to one another. Therefore, the first step in our market analysis was to manipulate the raw data received into a structure suitable for Ofcom's intended analysis.

A6.11 The following tasks were carried out to ensure the data received is presented in a consistent format:

- Circuits considered to be outside the leased line markets as defined by Ofcom were removed;
- The circuit bandwidths were checked, to ensure they are all consistently recorded in the same unit. The bandwidths were converted to a common format, expressed in Mbps (megabits per second);
- Postcode correction was carried out to remedy the common detectable errors made when using automated batch processing techniques to record postcode data;
- Circuit end point analysis was carried out to identify the non-customer end-points and exclude these from the service share calculations. End-points located at Datacentres, such as Telehouses, Telelinks or Telecite sites are also excluded. Where operators had not provided data on the type of end-point being served, any network end-points were identified using the operator flex point information that was provided;
- Extraction of the postal sector from the postcode data; and
- For the retail market share, the circuits sold by OCPs were compared to the circuits sold by BT to ensure that double-counting does not occur; to identify circuits bought by OCP from BT that are re-sold to end customers. If this is the case, the circuit would be recorded as being sold by BT rather than the OCP. The circuits are compared using the Circuit Identifiers, as requested in the Information Request.

Step 2: Aggregation by Postal Sectors

- A6.12 Following the data cleansing of the data submitted, the retail customer ends (A-End and B-End of the leased line) are identified.
- A6.13 The postal sectors are extracted from the postcode data for each circuit. If the postcode is not supplied, then the postal sector is used. Otherwise, the area or town is used to geocode the customer end.
- A6.14 We opted to aggregate at the postal sector level when conducting the geographic analysis. The intention would be to aggregate these postal sectors into larger geographic areas when defining the boundaries of separate geographic markets.
- A6.15 There are a total of around 10,000 postal sectors in the UK, including Northern Ireland. A summary of postal measures are shown below:

Table A6.2: UK Postal Measure

Geographic Unit	Number	Example
Postcode	1,752,003	SE1 9HA
Postal Sector	c.10,000	SE1 9
Postal District	3,064	SE1
Postal Area	124	SE

- A6.16 Typically, a retail circuit has two customer ends. If each end is in a different postal sector, then each end is allocated to the relevant postal sector. If both ends are in the same postal sector, then both ends are allocated to that postal sector.
- A6.17 The number of retail customer ends in each postal sector is calculated for each operator. This is done for each defined market.

Step 3: Uplift of Data

- A6.18 Some of the data supplied by the operators were missing or incomplete. This could be in terms of geographic, product or bandwidth information. In this case, the data are uplifted.
- A6.19 Product/bandwidth uplift – where the product name or bandwidth has not been provided by the operator, the circuits with unknown bandwidth is allocated to the bandwidth in proportion to the operator’s overall circuit distribution.
- A6.20 Geographic uplift – where postcode information has not been provided, the circuits with unknown geographic data are distributed across the postal sectors in proportion to the operator’s geographic distribution.
- A6.21 Although the overall uplift required was relatively small in terms of the national market, Ofcom recognises that there could be pockets of locations where the accuracy of market size and subsequent market share calculations could have been compromised as a result of applying uplifts in this manner. These uplift errors could

be significant at the individual postal sector level in certain areas, but the impact of the errors decreases as these postal sectors are aggregated into larger areas, and is outweighed by the improved overall accuracy by applying the data uplift.

Step 4: BT Service Share Calculation

A6.22 Once the number of customer ends for each operator is determined, BT's share of the retail services is calculated in each postal sector.

A6.23 The service share bands that are used are as follows:

- 0% to 30%
- 30% to 40%
- 40% to 50%
- 50% to 70%
- Above 70%

Wholesale service share analysis

A6.24 Ofcom's intention when it devised the information requests sent to operators was to conduct a service share analysis for each of the relevant wholesale markets similar to that conducted for the relevant markets at the retail level and described above. However, the wholesale data received from providers in the Information Request has been such that it has not been possible to conduct the analysis as originally envisaged.

A6.25 Nevertheless, the data provided BT and OCPs relating to the wholesale markets have been such that it has been possible to conduct an analysis of the wholesale markets. As noted above, in the provision of TI products, there are two types of wholesale input, symmetric broadband origination (TISBO and AISBO) and trunk. Using the data provided by the operators, Ofcom has been able to carry out the analysis as set out below.

A6.26 The market definition boundaries between terminating and trunk markets are based on relevant network topology, and in particular we have used the location of network nodes to inform the break between terminating and trunk segments.

A6.27 For every circuit, based on data supplied by BT, it is possible to match the postcode information on the A and B-end of each circuit to a relevant parented BT Tier 1 node. We combine this Tier 1 parenting information to determine whether the circuit is likely to have a trunk component.

A6.28 Based on the 2003/04 Review definition, trunk segments were defined as providing transmission between two BT Tier 1 nodes. Based on the 2003/04 Review definition, it would therefore be assumed that circuits with ends parented on the same BT Tier 1 node would not include a trunk segment, even though in practice these circuits might be physically routed through trunk nodes. However, as set out in Section 6, instead of defining trunk based on BT's Tier 1 nodes, we have proposed to identify a set of 46 "aggregation nodes". As part of this analysis, we

have mapped BT's 67 Tier 1 nodes to 1 of the 46 proposed "aggregation nodes" based on the criteria we set out in Section 6.

A6.29 Therefore, circuits parented to the same Tier 1 node or to the same "aggregation node" would not include a trunk segment. This could result in some inter-Tier 1 traffic no longer being counted as having a trunk segment (i.e. where both Tier 1 nodes fall under the same aggregation node).

A6.30 We requested the following circuit information from operators:

- Retail circuits – all retail circuits;
- Wholesale Purchase – wholesale circuits purchased from BT and OCPs; and
- Wholesale Provision – wholesale circuits sold/provided to BT and OCPs.

A6.31 However, the information provided by the operators did not include circuits that are self-provided. Therefore the analysis of the TISBO and AISBO wholesale markets used the data available to derive the circuits that are self-provided. The wholesale data was compared against the results of the retail service share analysis by postal sectors to derive the wholesale service share.

A6.32 The wholesale market can be seen as the sum of the following components:

Total Market = BT Self-provide + BT to OCP + OCP Self-provide + OCP to OCP			
(A)	(B)	(C)	(D)

A6.33 Components (B) and (D) can be found from the data provided by the operators, while components (A) and (C) are derived by comparing the retail circuit information and circuits purchased from others.

A6.34 Therefore, the wholesale service shares for each operator is found using the following:

Wholesale = Retail – Wholesale Purchase + Wholesale Provision

A6.35 Similar to the Retail Service Share analysis, the methodology to estimate the operator wholesale service shares consists of the following four steps:

- i) Data cleansing and normalisation;
- ii) Aggregation by postal sector;
- iii) Data uplift; and
- iv) BT wholesale service share calculation.

Step 1: Data cleansing and normalisation

A6.36 Similar to the retail service share analysis, it was necessary for Ofcom to manipulate the raw data submitted by the operators into a structure suitable for Ofcom's intended analysis.

A6.37 The data cleansing and normalisation were carried out as follows:

- Circuits considered to be outside the leased line markets as defined by Ofcom are removed;
- The circuit bandwidths are checked, to ensure they are all consistently recorded in the same unit. The bandwidths are converted to a common format, expressed in Mbps (mega bits per second);
- Postcode correction was carried out to remedy the common detectable errors made when using automated batch processing techniques to record postcode data;
- Circuit end point analysis was carried out to identify the customer end-points and network end points. Where operators had not provided data on the type of end-point being served, any network end-points were identified using the operator flex point information that was provided;
- Trunk segment determination – the parent Tier 1 and aggregation nodes for the ends of each circuit are determined, using data provided by BT. Each circuit is then identified as having a trunk segment or not; and
- Extraction of the postal sector from the postcode data.

Step 2: Aggregation by Postal Sectors

A6.38 Similar to the step carried out in the retail service share analysis, the postal sectors are extracted from the postcode data for each circuit, as Ofcom opted to aggregate at the postal sector level for the geographic analysis.

Step 3: Data Uplift

A6.39 As with the retail analysis, an uplift factor was applied to the output data from Step 2 to align this with the known number of end points in each market calculated in Step 1 of the analysis:

Step 4: BT Service Share Calculation

A6.40 The wholesale service shares are calculated from the retail, wholesale purchase and wholesale provision information supplied by each operator. Once this is calculated, BT's wholesale service share in each postal sector is then determined.

Trunk service shares

A6.41 To assess circuit counts on trunk routes there are a few instances (on particular trunk routes) where our geographic data might suggest that the total number of trunk circuits that OCPs purchase from BT (or other CPs) is in excess of their total demand for trunk circuits (i.e. the trunk demand arising from the retail markets). This partly reflects the fact that some of our geographic information was not always

complete (as reflected in the need to apply data uplifts where there was missing data). This could also arise, for instance, where CPs rely on a particular trunk route to serve other destinations (e.g. the London Birmingham route might be used in combination with Birmingham Manchester as an alternative to building direct trunk route from London to Manchester).

- A6.42 Therefore, when using the trunk data to estimate self-supply, this might suggest that on some routes OCPs are purchasing more circuits than they need to serve the retail demand for that route (e.g. if there were more wholesale sales to third than retail circuits sold with ends in London and Birmingham). In these circumstances, if we were to apply the formula in paragraph A6.32, this might result in a negative value for the implied amount of OCP self-supply (term (C) in the above formula). If we used negative OCP self-supply values in our calculation of service shares, this would tend to overstate BT's service shares on a particular route.
- A6.43 To account for this issue, we apply adjustments to circuit counts to ensure that OCPs' total wholesale purchases on a particular route do not exceed their demand for trunk on that route, so that we can avoid negative values for self-supply in the above formula. For the relevant routes where this was an issue, we still have to estimate what proportion of the OCPs' total trunk demand on that route would be met either by BT or OCP wholesale trunk circuit sales. We therefore use the respective proportions of BT and OCP sales of circuits to third parties on that route.
- A6.44 For example, if we consider a particular route where BT and OCPs in total sell 100 trunk circuits sales to third parties. If BT sells of these 75 circuits and OCPs the remainder 25 circuits, then the relevant proportions would be 75% and 25% respectively for BT and OCPs. We would then apply these proportions to the total OCP trunk demand to calculate how many circuits would be provided by BT or OCPs on that route. Therefore, if total OCP demand on the relevant trunk route were 80 circuits, we would assume that 60 circuits (75%) would be provided by BT and 20 circuits (25%) by OCPs.
- A6.45 Combining this information with circuits that BT self-supplies, we can then calculate a more reasonable estimate wholesale service shares for individual trunk routes.

Network Reach Analysis

- A6.46 As set out in Section 6, Ofcom has carried out an analysis of the network operators to assess the extent to which these operators can use their own networks to provide services, either at the retail or at the wholesale level. The network reach analysis can be used to inform an assessment of the extent to which the provision of business connectivity services in different geographic areas is contestable.

Data used

- A6.47 To inform the network reach analysis, Ofcom used a variety of data collected following the Information Request from network operators with regards to their network information, and data purchased from Experian for the location of businesses in the UK.
- A6.48 The Experian Business Database provided information on the location of businesses with 250 or more employees within the business. The 250 employee cut-off point was used since, based on discussions with industry, Ofcom is of the view that this is a reasonable proxy for the size of business that could be a potential

customer of leased line services. It is also the case that the cost of a leased line is less likely to be justifiable in the case of smaller businesses.

A6.49 Data on network reach were collected from each of the Other Communications Providers (OCPs) and BT. We requested the most recent data on their network infrastructure, geographically located by means of their postcodes / addresses / coordinates. This included the following information:

- Fibre network maps;
- Flex points or aggregation points: where existing fibre can be added to in order to connect to end-users. Flexibility points may well be buildings where fibre terminates on an Optical Distribution Frame or underground chambers where the fibre can be accessed, where ducts meet at a junction (etc). The fibre in the ground/duct would have to be added to by fibre-splicing and duct dug in order to connect an end-user premise to the fibre optic cabling;
- Points of interconnect with BT; and
- Points of interconnect with OCPs.

Overview of analysis

A6.50 The network reach analysis consists of the following parts:

- Flex Points analysis – count of OCPs' flex points for each postal sector;
- Contestability analysis – an assessment of the number of operators to which each large business location could seek supply, taking into account different economic build distance assumptions; and
- Interconnect analysis – the ability for operators to interconnect.

Flex Points Analysis

A6.51 The flex points analysis used geo-analysis software to plot each of the OCP's flex points information to calculate the number of flex points in each postal sector. This gives some sense of geographic variations in competitive conditions that could exist, as the areas of greater concentration of operator flex points are likely to generate a stronger competitive constraint than those areas where there is less concentration or no flex points present.

A6.52 However, to provide a more comprehensible picture of the geographic variations in competitive conditions, further analysis is required as the operator's flex points are not limited to providing services to end users located within a single postal sector. Depending on the size of the postal sector, the distribution of large businesses around flex points and assumptions on the economic build distance, an operator could provide services to end users in a number of different neighbouring postal sectors.

Contestability Analysis

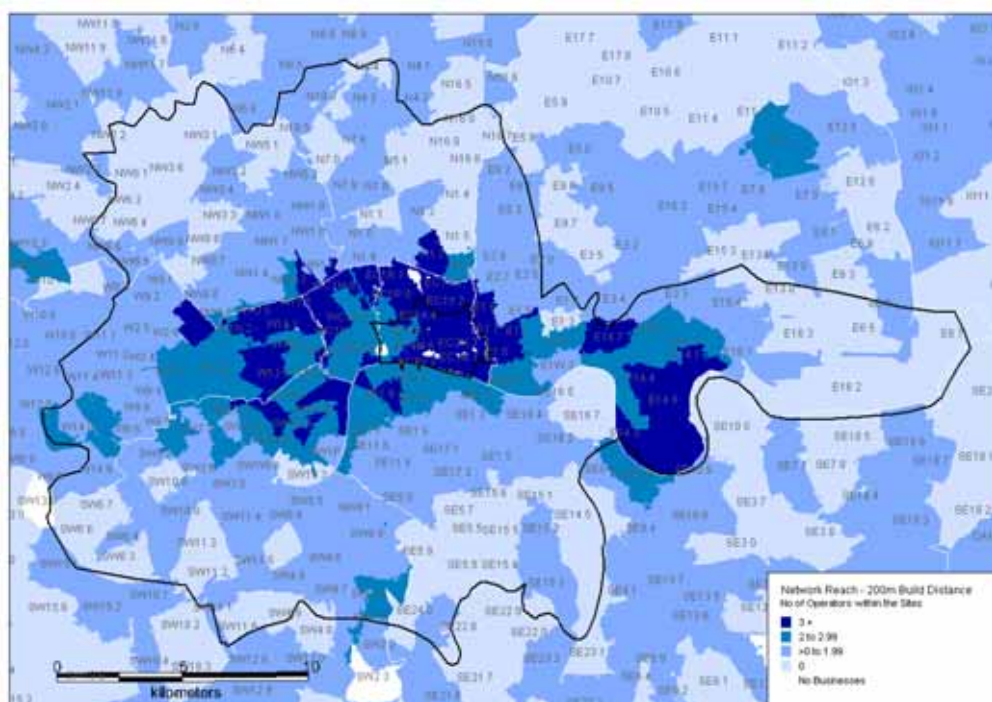
A6.53 This analysis seeks to find the average number of operators that are able to provide services to end users in each postal sector. The main assumptions for this analysis relate to:

- the number of operators required to provide a sufficiently greater level of competitive constraint as compared with those areas where there is no choice of operator; and
- the economic build distance, which is the distance that an operator would build out from their network in order to provide services to end users.

- A6.54 In order to illustrate the differences in competitive constraint that may exist, Ofcom's base case assumption is that in the circumstances of leased lines markets there would need to be at least two additional operators (i.e. at least 3 operators) in an area in order to provide a sufficiently different competitive constraint.
- A6.55 The build distance assumption made in this analysis is that operators would be willing to extend their network by a distance of 200m¹¹⁷ to serve a business customer. Ofcom recognises that this distance would vary on a case by case basis. However, an assumption on build distance has to be made for the purpose of this analysis.
- A6.56 As the base case analysis uses information on flex points, which are located deeper into an operator's network, rather than on points of presence, a shorter economic build distance can be assumed.
- A6.57 The analysis involves plotting geographically the location of all large business sites in the UK with more than 250 employees across the business, and comparing this with the geographic location of OCP's flex point information. The average number of operators per business location in each postal sector is calculated, assuming the build distance.
- A6.58 Figure A6.2 below shows the results of the contestability analysis for Central London Zone (CLZ). This assumes a build distance of 200m and a constraint of at least two OCPs.

¹¹⁷ In the July 2008 consultation we set out our reasons for using an assumed economic build distance of 200m as opposed to 250m as used in the January 2008 consultation. In Section 6 above we address comments received in response to the two consultations on this assumption.

Figure A6.2: Number of operators in the CLZ, assuming 200m build distance



- A6.59 From this figure it can be seen that a significant number of postal sectors within the City of London area appear to show that on average, at least three OCPs are able to provide leased lines services to businesses located within these postal sectors.
- A6.60 This analysis was also conducted for other cities in the UK and the results show a similar pattern to that observable in London, as there are greater concentrations of operator flex points in the centres of these cities. However, the geographic coverage of any greater constraints that may exist is more limited, covering a fewer number of postal sectors.
- A6.61 Figure A6.3 to A6.8 below show the results of the contestability analysis, assuming a build distance of 200m for major cities in the UK, based on population. These major cities include Birmingham, Glasgow, Liverpool, Leeds, Sheffield, Edinburgh and Manchester.

Figure A6.3: Number of operators in Birmingham, assuming 200m build distance

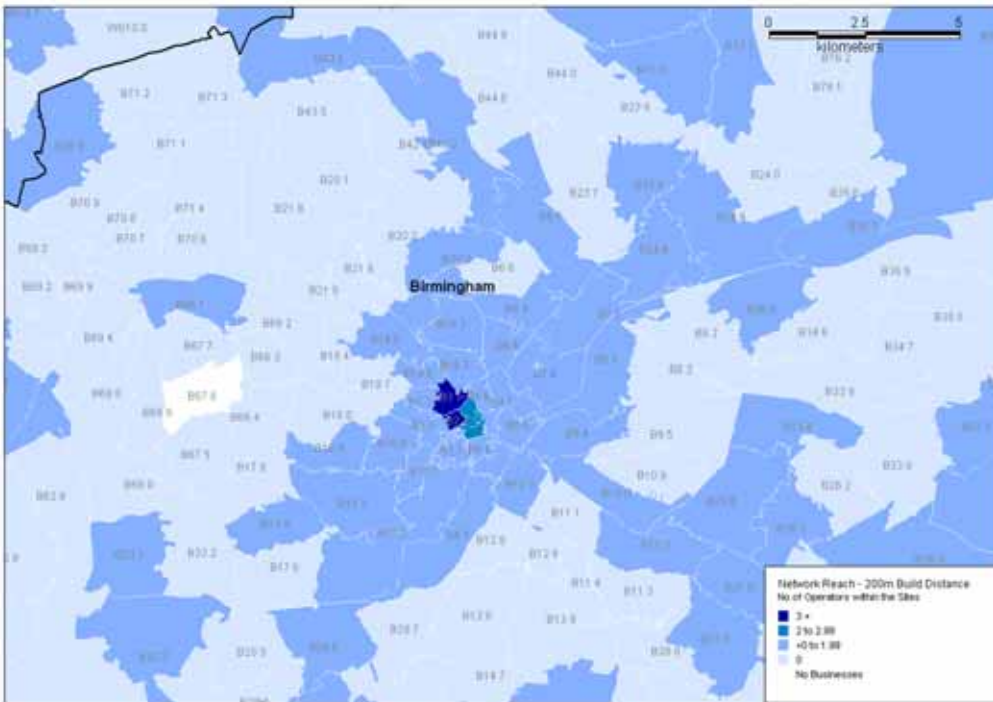


Figure A6.4 – Number of operators in Glasgow, assuming 200m build distance

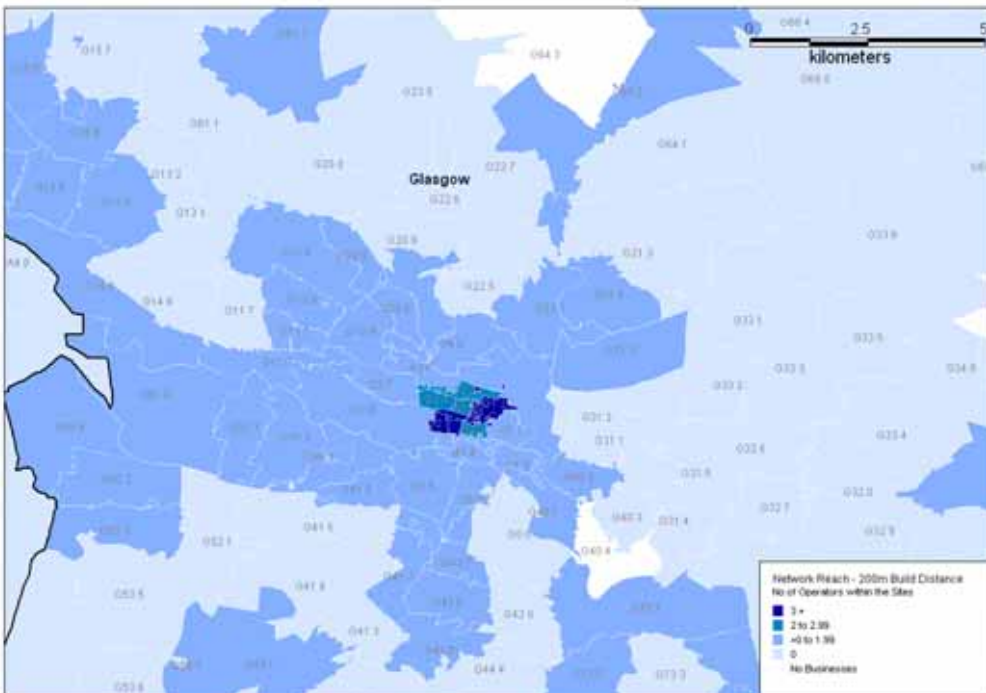


Figure A6.5: Number of operators in Liverpool, assuming 200m build distance

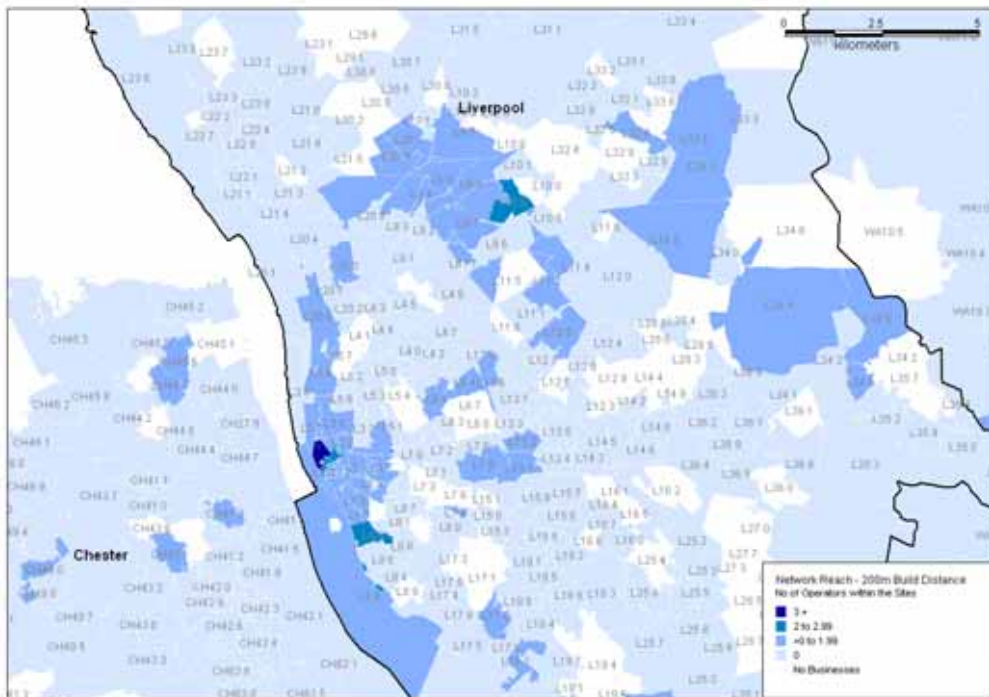


Figure A6.6: Number of operators in Leeds, assuming 200m build distance

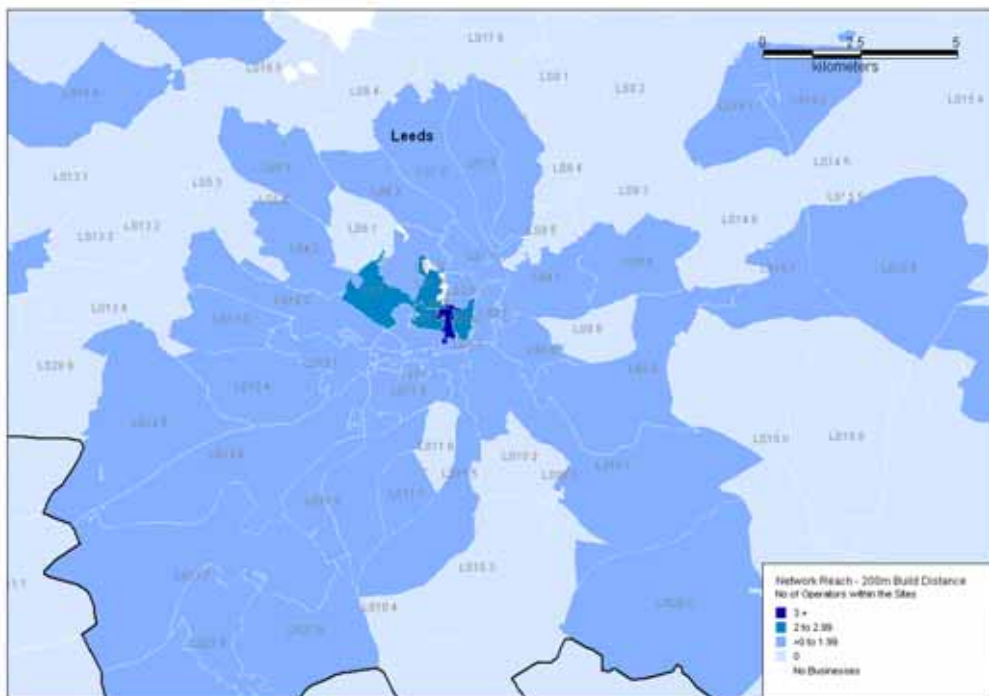


Figure A6.7: Number of operators in Sheffield, assuming 200m build distance

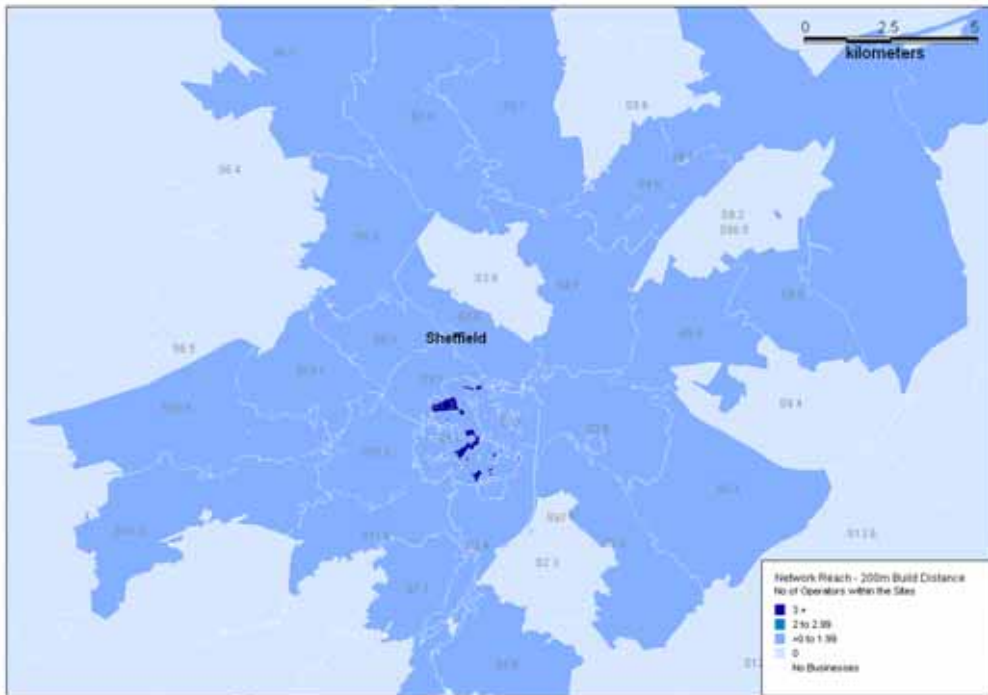
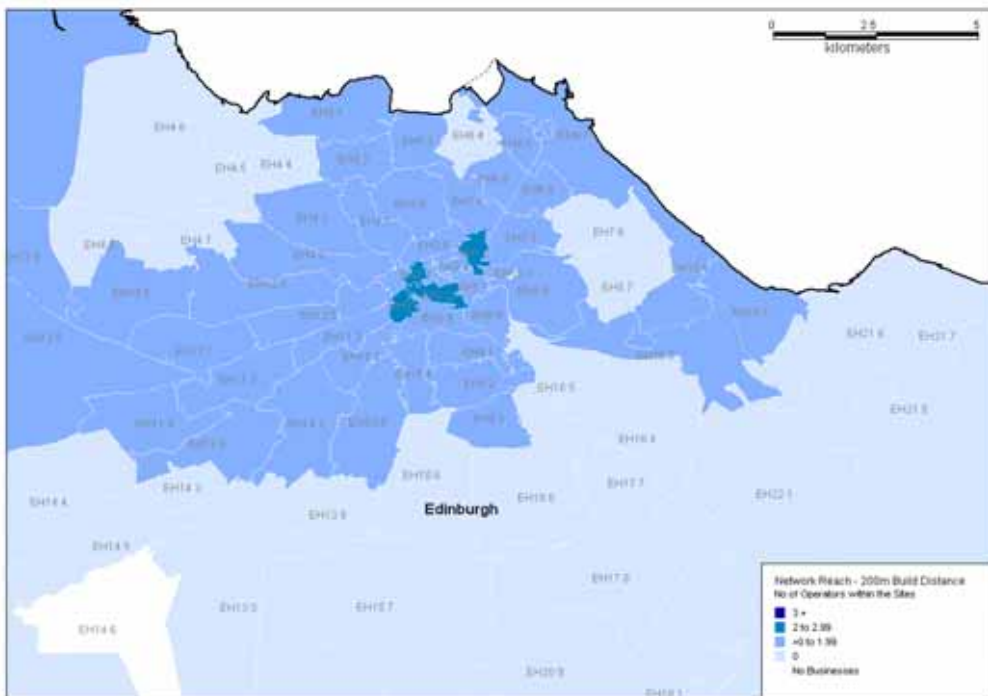


Figure A6.8: Number of operators in Edinburgh, assuming 200m build distance



Annex 7

Aggregation nodes and geographic trunk analysis

Introduction

A7.1 In this Annex, we set out further analysis we have undertaken to finalise our views on the scope of the trunk market. This further analysis is in light of responses to the January 2008 consultation and considers two main areas:

- **London TI aggregation nodes:** in the January 2008 consultation, we proposed a single aggregation node covering the Greater London area. We have re-assessed this proposal and, based on the analysis below, we now conclude that we should identify eight aggregation nodes for TI trunk in the London area; and
- **The scope of the AI market:** in order to inform the scope of the AI market, we have also identified relevant AI aggregation nodes. Our assessment is that the aggregation nodes identified for the TI market provide a useful starting point (as these reflect the key areas where businesses are concentrated). There are some differences, however, that are likely to increase aggregation opportunities for the AI market. Therefore, we have identified an additional ten AI aggregation nodes based on further analysis.

A7.2 Prior to the detailed discussion of the above issues, we provide a brief reminder of the “aggregation nodes” concept and how we went about using this approach to define the break between trunk and terminating markets. We already covered many of these issues in Section 6, but we have repeated the discussion in this Annex. This is because it helps introduce some of the issues associated with identifying the aggregation nodes for the AI market and for the TI market in the London area.

A7.3 We therefore highlight the key concepts behind the aggregation nodes approach below. Following this discussion, we then discuss each of the steps we have followed to finalise our view on TI and AI aggregation nodes.

Summary of the aggregation nodes approach

A7.4 In the 2003/04 Review, we identified the breakpoint between symmetric broadband origination (terminating segments) and trunk segments based on BT’s Tier 1 nodes. This definition also meant that “equivalent” nodes on other communications providers’ networks identified the relevant breakpoint between origination and trunk markets services on their networks.

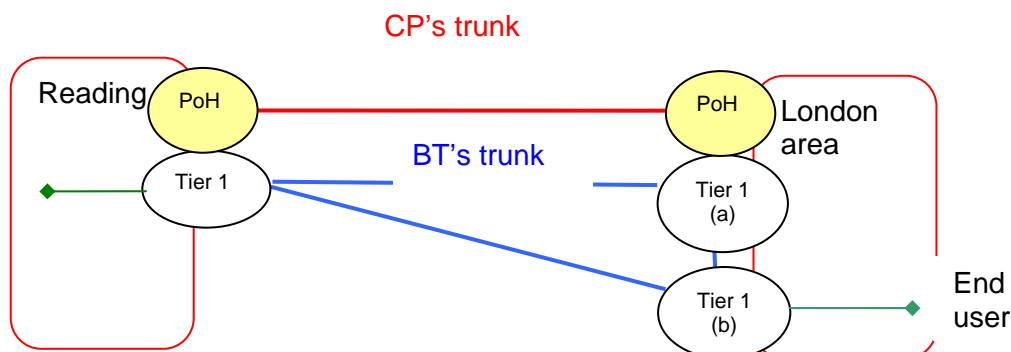
A7.5 In the January 2008 consultation, we considered, however, that we should revisit the 2003/04 Review trunk market definition, as we considered that it no longer captured sufficiently the key competitive differences between trunk and terminating markets. The evidence we looked at in the January 2008 consultation suggested that OCPs have not interconnected at all of BT’s Tier 1 nodes. This was reflective of the fact that, in many cases and for many urban or business centres, there was often more than one Tier 1 node serving that location. Our assessment of the available aggregation opportunities in each geographic area suggests that OCPs are only likely to interconnect at a single point serving a particular area. Hence,

although OCPs typically interconnect at some of BT's Tier 1 nodes, the total interconnection coverage by an individual OCP is not likely to extend to all of BT's 67 Tier 1 nodes. As such, when OCPs purchase PPC terminating segment from BT this often included a short element between Tier 1 nodes to an OCP's relevant Point of Handover.

Why CPs are unlikely to interconnect at all Tier 1 nodes

- A7.6 To see why a CP is unlikely to interconnect at all Tier 1 nodes, we consider an example below, which looks at the possible wholesale inputs used to supply a retail circuit from London to Reading. We have referred to this example (which was also used in the January 2008 consultation) to help explain the factors driving CPs' interconnection decisions and, having identified these factors, we then go on to explain how we used this information to analyse the break between trunk and terminating segments.
- A7.7 As shown in Figure A7.1 below, in our example, we assume that an OCP has its own trunk capacity from its point of handover (PoH) in London to the Tier 1 node in Reading, so it can self-provide the trunk across this route. We have assumed that this OCP would require a terminating segment and would need to purchase this from BT. If the CP wanted to provide a retail circuit to the end-user shown in Figure A7.1, this would require a terminating segment to connect the London premises to the parent Tier 1 node (Tier 1 (b) in the Figure below). And as the CP in our example is interconnected (Tier 1(a)), it would also need to purchase a circuit connecting the two London Tier 1 nodes Tier 1(a) and Tier 1(b).

Figure A7.1: CP interconnection at Tier 1 nodes serving the same urban centres



Source: Ofcom, November 2008

- A7.8 In the above example, the CP could potentially compete to supply retail circuits between London and Reading using its own trunk capacity (from its PoH at Tier 1 (a)). Indeed, in order to exploit (and achieve) sufficient economies of scale on its trunk route, an OCP may well require that all of its traffic between urban centres is conveyed over a single high capacity trunk circuit if possible. This is because the benefits of using its own trunk capacity might only be realised if it can aggregate together sufficient volumes of circuits from all of its customers London area.
- A7.9 In the January 2008 consultation, reflecting the above logic, we considered that we should define circuits linking major urban centres as trunk. Following the same logic, the competitive conditions in links between Tier 1 nodes in the same urban area are more likely to resemble those associated with backhaul markets. This reflects the fact that the opportunities to exploit aggregation opportunities are much

smaller on intra-urban links. In our example, the node at Tier 1(b) might serve insufficient end-users to further invest in an additional interconnection point. In addition, in order for a CP to be able to provide competitive trunk (between London and Reading) it might also be necessary that the CP aggregate all of its London traffic over a single trunk link (i.e. trunk will only be competitive where the CP achieves sufficient scale).

- A7.10 This means that CPs will only interconnect where sufficient aggregation opportunities are present to exploit the benefits of trunk circuits (i.e. a single PoH at Tier 1(a)). In our example above, the OCP would need to purchase wholesale circuits from BT to provide links from customer premises to its PoH. The links purchased from BT would comprise a circuit for the end-user to Tier 1(a) and also to a circuit to Tier 1(b).
- A7.11 As stated above, the evidence we looked at in the January 2008 consultation suggested that OCPs were not interconnected at all Tier 1 nodes serving the same urban area. OCPs therefore often purchased a short trunk element between Tier 1 nodes to their relevant Point of Handover. These short trunk elements had characteristics closer to backhaul than trunk. Therefore, we thought that it would be more appropriate to treat circuits between Tier 1 nodes in the same area as TISBO rather than trunk.

Why the aggregation nodes better captured the break between trunk and terminating

- A7.12 In the above discussion, we highlighted why, in general, CPs might only seek to interconnect at one node to serve a particular urban centre. In the January 2008 consultation, we thought that the simplest way to reflect this would be to group together Tier 1 nodes in similar locations. We referred to these groupings of Tier 1 nodes as “aggregation nodes”. An OCP serving an urban area would need only one major point of handover within an aggregation node and so it would choose only one of the Tier 1 nodes that fell within a particular aggregation node.
- A7.13 However, the process to identify of an appropriate set of aggregation nodes needed to be more involved than simply grouping Tier 1 nodes that happen to be located in the same urban area. Where traffic is highly concentrated, it may still make commercial sense for an OCP to connect at more than one node (even if those nodes are relatively close to each other). We therefore needed to find an appropriate methodology to group together relevant Tier 1 nodes to form our consolidated list of aggregation nodes.

We used proximity analysis to identify relevant Tier 1 groupings

- A7.14 In the January 2008 consultation, we proposed to use “proximity analysis” to group together nodes within a certain “proximity” to another node.
- A7.15 Our logic for grouping nodes based on proximity was that it reflected the relationship between circuit volumes and distance, which we identified as key determinants of CPs’ interconnection decisions. Volumes are important, as the benefits of grooming traffic sooner onto the CPs own network will be higher the greater are the opportunities for the CP to aggregate that traffic to exploit the economies of scale associated with trunk. At the same time, the potential benefits of additional interconnection would also depend on the distances involved (between an existing interconnection point and a potential new interconnection location). If a CP only has to backhaul its traffic relatively short distances, the savings (in grooming its traffic onto its trunk network sooner) would be smaller.

- A7.16 Therefore, the volumes/distances relationship is the key determinants of the potential benefits of interconnection, which a CP would compare to the costs of additional interconnection. For each Tier 1 node in the UK, the proximity analysis first considered the location of that node relative to other potential Tier 1 node interconnection points nearby and the volumes of circuits served by each Tier 1 node. Using information on the volumes of circuits sold at each Tier 1 nodes, we then determined an appropriate “proximity assumption” for each node.
- A7.17 The proximity assumptions we used in the January 2008 consultation are described in detail in Section 6 of this document and in paragraphs 6.120-6.133 of the January 2008 consultation. In summary, we proposed three broad categories (i.e. based on the trunk traffic volumes originating or terminating at that node). For example for nodes serving a high-volumes of circuits (in excess of 1,500 circuits), we assumed that unless the CP was already interconnected at another node within a radius of up to 10 to 15km, it would be worthwhile locating at that node. For nodes serving a smaller volume of customers the “proximity assumption” would increase to 20 to 25km.
- A7.18 For each node, we assessed whether there was another Tier 1 node nearer than the distance implied by the relevant “proximity assumption” for that node. If there was a Tier 1 node within reach of the node in question, we would group those Tier 1 nodes together as part of the same aggregation nodes. Hence, using volumes of circuits sold at each node and the relative distances between nodes, we could use our proximity assumptions to establish which Tier 1 nodes we might group together.

We used other information to verify our proximity assumptions

- A7.19 The “proximity assumptions” we used in the January 2008 consultation were not based on precise calculation of operator costs and build decisions. Nevertheless, we sought to verify the proposed range of proximity assumptions (i.e. 10-15km for high volumes through to 20-25km for low volumes) against information that a CP provided on its build decisions for trunk (see paragraph 6.126 of the January 2008 consultation). The information the CP provided us allowed us to determine, for example, its view of likely circumstances where it would be economic to build additional trunk circuits (particularly the volumes and distances where trunk investment would be feasible).
- A7.20 In parallel to this analysis, we also looked at where OCPs typically located their network and points of interconnection. Had the wider analysis of OCPs’ interconnection suggested that they were present at nearly all Tier 1 nodes, then this could have suggested much shorter proximity assumptions. If OCPs were located at limited number of core nodes, this would have tended to suggest much longer proximity assumptions. In the event, our analysis broadly supported the aggregation node proposals generated using our proximity analysis.

We identified 40 aggregation nodes in our January 2008 consultation

A7.21 The proximity analysis and the analysis we conducted in parallel that looked at actual on CPs' interconnection decisions resulted in us identifying 40 aggregation nodes. In general, the aggregation nodes we identified grouped together BT's Tier 1 nodes in particular regions or urban centres. For example, for the London area, the proximity analysis resulted in grouping of 19 Tier 1 nodes into a single London aggregation node. This is shown in Table A7.1 below.

Table A7.1: Summary of Tier 1 nodes falling with London aggregation node (using 15km radius)

BT TIER 1 NODES WITHIN LONDON AGGREGATION NODE	
FARADAY	MAIN NETWORK ELTHAM RS
SOUTHBANK	WOOLWICH
BISHOPGATE	MILE END
COVENT GARDEN	POPLAR
MAIDA VALE	POTTERS BAR
MUSEUM	WOODGREEN SSC
COLINDALE SSC	CROYDON SSC
EALING SSC	KINGSTON SSC
HARLESDEN	WATFORD HERTS
ILFORD SSC	

Source: Ofcom, 2008

Further assessment of the London aggregation nodes

A7.22 In Section 6, we highlighted why, in light of the respondents views to our January 2008 consultation, there was a case to support additional aggregation nodes in the London area. In particular, there is a far larger density and volumes of traffic, which suggests that OCPs have been able to achieve the necessary economies of scale (and scope)¹¹⁸ to justify further network build and interconnection at a number of locations within London.

A7.23 To assess this further, we have revisited the proximity analysis we undertook for the London area. We have also considered more detailed evidence on OCPs' interconnection.

Revised proximity assumptions for the London area

A7.24 As discussed above, we did not base the "proximity assumptions" in the January 2008 consultation on detailed explicit modeling of operator costs and build decisions. However, the proximity assumptions we used did appear to correlate with

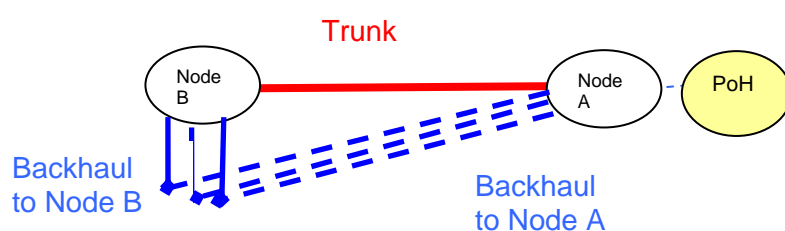
¹¹⁸ Economies of scope (in the context of the trunk market) refers, for instance, to the ability to aggregate together different bandwidth TISBO services onto a single high capacity trunk link.

information an operator provided on its trunk network build decisions. In parallel, we also sought to look at evidence on OCP interconnection to verify our results.

- A7.25 However, the responses to the January 2008 consultation suggested that our proximity analysis did not capture in sufficient detail the particular aggregation opportunities available in the London area. To address this concern we have sought to model more explicitly the type of cost / benefit assessment that a CP might undertake when considering possible interconnection. We have then used this model to determine the relevant “proximity assumptions” for each of the 19 London nodes and for this information the relevant aggregation nodes.
- A7.26 In the January 2008 consultation, we applied a single (10-15km) proximity assumption for “high volume” Tier 1 nodes (and we applied the same assumption for any nodes in the London area). Our revised approach provides a more granular view of appropriate proximity assumptions in the London area, with an individual proximity assumption calculated for each Tier 1 node serving the London area. We think that this more detailed view is warranted because the London area accounts for approximately one third of all trunk circuits sold. On further examination of the traffic at different Tier 1 nodes in London, we have also found that there is also quite a large difference in traffic concentration across different London nodes. As such a uniform “proximity assumption” applied to each of the London Tier 1 nodes would not capture the different aggregation opportunities that may exist at different nodes.
- A7.27 To ensure that our results are not reliant solely on our revised proximity assumptions for the London nodes, we have also sought to verify our results by assessing observed levels of interconnection in the London area. We have also compared our results to BT’s own future roll-out decisions on its 21CN network, which it will use (in part) to support leased lines traffic alongside other traffic streams such as broadband and voice. This latter information is relevant, as the design of BT’s new network has provided it with an opportunity to re-assess the optimal location of nodes.

Determining revised “proximity assumptions” for the London area

- A7.28 As stated above, the aggregation nodes we identified seek to capture the key factors differentiate trunk from terminating segments. In particular, the trunk market reflects the bulk transfer of traffic on high capacity routes (typically between major urban centres) to exploit economies of scale and scope. By contrast, we have identified terminating segments in the traditional interface markets are likely to be less competitive due to more limited aggregation opportunities.
- A7.29 In the most part, we suggested that an OCP would use a single node to serve a particular urban area. But for the London aggregation node, however, there are reasons why the concentration of traffic makes it worthwhile to have more than one aggregation node. Take for example an OCP that has initially built out its trunk network to a location in Central London (shown by Node A in Figure A7.2 below).

Figure A7.2: Relative costs of trunk and backhaul

□

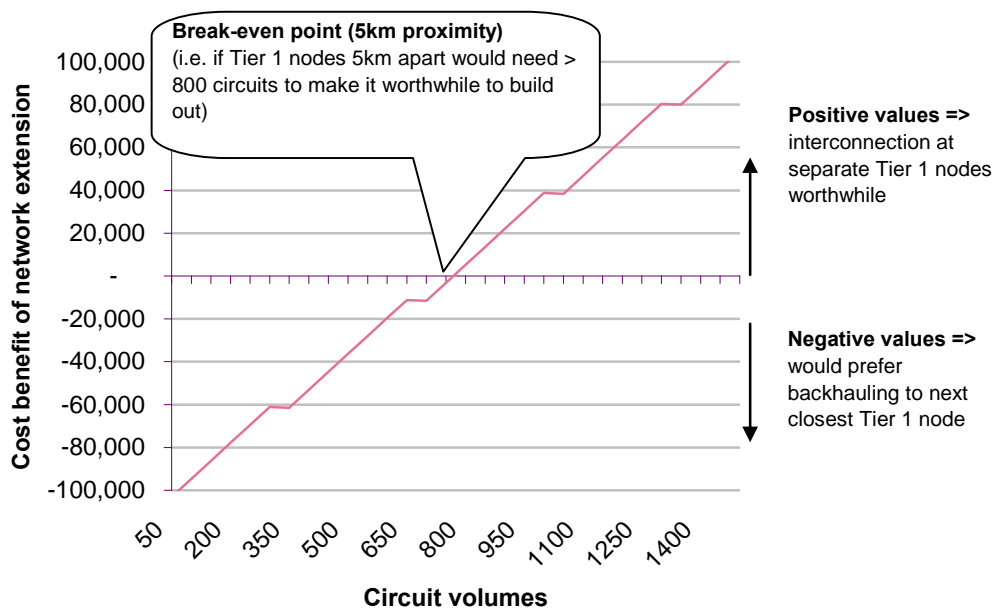
Source: Ofcom, November 2008

- A7.30 If we assume that a CP is located at Node A, it may consider, for instance, whether to invest at an additional interconnection point (Node B) in London. If we find that it is not worthwhile to invest at both Node A and Node B, then both are regarded as part of a single aggregation node (hence the circuit between those two nodes would be a terminating segment). On the other hand, if aggregation opportunities suggest interconnection at both nodes is worthwhile, this is indicative that the circuit between Nodes A and B is trunk.
- A7.31 When deciding whether to interconnect at more than one node a CP would need to consider the potential lower costs of trunk (particularly whether sufficient aggregation opportunities exist) compared to backhauling a circuit over longer distances (i.e. backhauling to Node A).
- A7.32 The backhaul costs saved (i.e. backhauling from Node B to Node A) depend on the relative distances involved. If Node A is quite close to Node B, a CP would not have to backhaul those circuits much further from its retail customer sites to get to its existing point of interconnection at Node A (than if it had interconnected at Node B). The cost and benefits would also depend on whether it is cheaper to use a trunk circuit rather than backhauling the additional distance to Node A.¹¹⁹ It will only be cheaper to use trunk capacity if there are sufficient volumes of traffic, given the larger required economies of scale associated with trunk.
- A7.33 The discussion suggests that the benefits of interconnection depend on there being sufficient volume of traffic served at the possible new interconnection point (at Node B) and sufficient distance between the nodes to make any saving in backhaul costs worthwhile.

Expressing interconnection decision as a break-even relationship

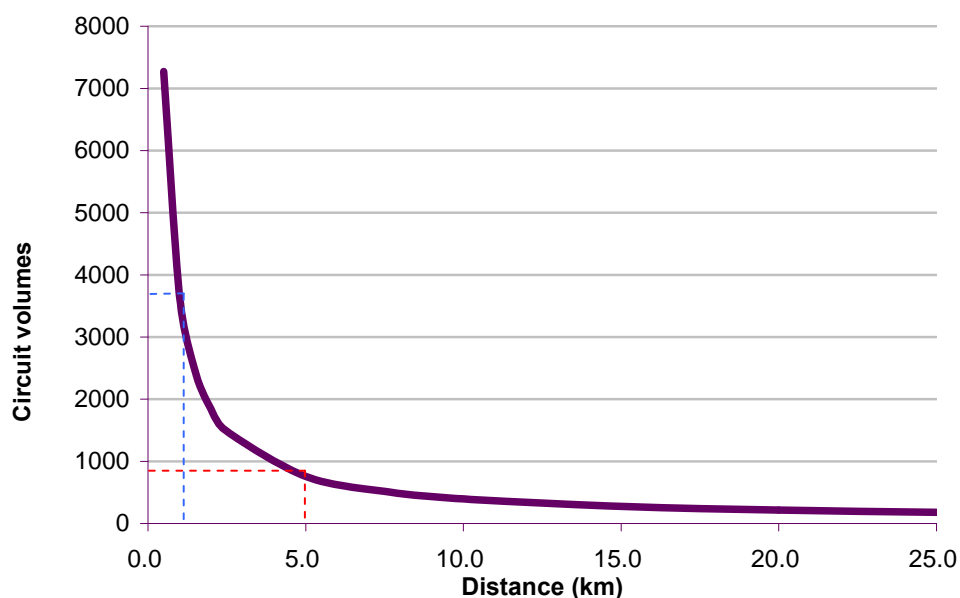
- A7.34 An alternative way to express the relative costs and benefits implied by the above interconnection decision would be in terms of a break-even relationship. This would entail identifying, for a given distance between two potential nodes (i.e. between Node A and B), the required volume of circuits (at Node B) to make any investment in an additional interconnection (at Node B) worthwhile (assuming that a CP is already located at Node A).

¹¹⁹ We are seeking define the possible scope of the trunk and terminating markets (i.e. whether a terminating segment should be defined as potentially being longer than the nearest parented Tier 1 node and includes circuits between Tier 1 nodes in the London area). It would not be appropriate to assume that the regulatory requirement exists to provide trunk or terminating segment to particular locations, such a regulatory requirement would arise from a finding of SMP finding, and as this finding could potentially be affected by where we identify the boundary between trunk and terminating segments, we should assume the absence of regulation (for the purposes of market definition).

Figure A7.3: Break-even for additional trunk interconnection

Source: Ofcom, November 2008

- A7.35 We have calculated the above break-even relationship using estimates of the relative costs of additional interconnection and trunk (which are largely fixed) and the ongoing rental costs of terminating circuits (for those interested in the precise details, this is discussed in Box A.1 below). Figure A7.3 shows that a CP considering interconnection at two nodes within 5km of each other would require it to sell a sufficient number of circuits (at least 800 circuits) at the new interconnection point (Node B) for this investment to break-even. In Figure A7.3 above, the point on the x-axis where the line crosses the y-axis would represent the “break-even” volume. Hence, an additional interconnection investment would only break-even for volumes of around 800 circuits (and above).
- A7.36 We can also use the above cost-benefit comparisons for other interconnection scenarios (i.e. where there are greater or smaller distances between Nodes A and B) to calculate the relevant break-even volumes. We can then plot this as a distance/volume “break-even” relationship, as shown in Figure A7.4 below.

Figure A7.4: Break-even for additional trunk interconnection

Source: Ofcom, November 2008

A7.37 Figure A7.4 shows that the closer (farther) network nodes are to each other the greater (smaller) the volume of circuits required to make it worthwhile to interconnect at both nodes. The key point to this analysis is that we can use this volume/distance relationship to determine “proximity assumption” for each of BT’s Tier 1 nodes in London. Hence, for a given volume of circuits at a particular node (Node B), using the above break-even analysis, we can determine whether it would be worthwhile to interconnect at that node if an OCP already had an existing interconnection point nearby. For example, as shown by the red dotted line in Figure A7.4 above, if an OCP sold 800 circuits at Node B then it would only be worth interconnecting at Node B, where its existing interconnection point (Node A)) is farther than 5km this node (i.e. at a point to the right of purple line). On the other hand, if Node A is less than 5km to Node B, it would not be worth interconnecting both at Node A and at Node B.

A7.38 We have therefore used the above model to derive relevant “proximity assumptions” using the volume of circuits served by different Tier 1 nodes in London. Given the information we have on other London Tier 1 nodes in close proximity to each Tier 1 node, we can then compare this with our “proximity assumption” for each node to consider whether a CP would be likely to have a point of interconnection at a particular Tier 1 node (given it may already have an interconnection point nearby).

Assumptions used in our model

A7.39 The above model cannot provide a definitive view of the relevant cost and benefits as it depends on various assumptions regarding the relative costs of trunk versus terminating segments. We have explained in more detail our key assumptions in Box A.1 below. We think that the assumptions we have used as inputs to our model are sufficiently robust for it to generate an accurate view of the key likely interconnection points (given information on the proximity of nodes and the volumes of traffic).

- A7.40 However, the view we come to on potential aggregation nodes has not relied solely on this modelling exercise. To ensure that our outputs are sufficiently robust, we have also followed the approach we adopted in the January 2008 consultation by examining, in parallel, wider evidence on actual CP interconnection and operator build decisions in the London area. We have also conducted sensitivity analysis to understand the effect of changes to our assumptions of the relative costs of trunk and terminating segments on our view of relevant London aggregation nodes, which we discuss further in paragraphs A7.59 to A7.64 below.
- A7.41 Given that the results generated by our “bottom-up” modelling appear to correlate quite well with a “top-down” assessment of actual interconnection, we conclude below that it is appropriate to identify a number of aggregation nodes rather than a single node (as proposed in our January 2008 consultation).

Box A.1: Key assumptions used

This Box sets out some of the key assumptions underlying our break-even model. As discussed above the break-even model is based on a relative simple network build model. This relies on a comparison of the costs of backhaul to the nearest node (i.e. Node B in Figure A7.2 above) plus the cost of trunk and any additional Point of Handover equipment (i.e. interconnection equipment) versus the costs of backhaul to the next nearest node (i.e. Node A in Figure A7.2 above).

The final output of the break-even model is a relationship, which shows for a given volume of circuits at a particular node whether it would be economic to interconnect at that node. In deriving this model, we have had to rely on estimates of the relative costs of trunk and terminating segments and made some simplifying assumptions regarding the nature of demand for traditional interface services.

Modelling trunk costs:

- We used estimates of trunk costs using BT's published WDM costs. This includes the relevant split between relevant fixed elements and distance related elements.

Terminating costs:

- In modelling terminating costs, we have assumed that a number of terminating costs would be the same no matter which London node a CP would backhaul its circuits to (e.g. access related costs such as fixed local end costs)

Distance related terminating costs:

- The break-even calculation assumes that if a CP does not interconnect at a nearer node (Node B), it would not have the opportunity (in the absence of regulation) to purchase regulated trunk. Therefore, one of the costs of not interconnecting at the nearer node (Node A) is that it would have to purchase longer distance terminating segments to the next nearest Tier 1 node.

Additional interconnection costs:

- The key costs of locating at Node B would relate to the costs of an additional interconnection point. We have therefore used relevant published BT prices for its Customer Sited Handover charges to reflect the costs of interconnection.

Retail and wholesale circuit demand

- As a simplifying assumption, we have assumed that all customers demand 2Mbit/s circuits. This may understate the total bandwidth demand since circuit volumes are based on all relevant bandwidths. However, as low bandwidth circuits tend to dominate, we think that this assumption is reasonable.

Using the above break-even model to identify aggregation nodes

A7.42 As stated above, the above break-even model provides an appropriate “proximity assumption” for each of BT’s Tier 1 nodes. As we have available data on the volumes of circuits currently sold at a particular Tier 1 nodes and the proximity of Tier 1 nodes to each other, it is possible to use the above break-even information to determine the possible Tier 1 nodes we should group together as aggregation nodes.

Table A7.2: Proximity assumptions for each node

TIER 1 NODE	Estimated circuit sales	Proximity Assumption for node (km)	Distance to nearest node (km)	Group with another node?	Nodes within “proximity”
FARADAY	1395	2.5	1.5	Yes	Bishopsgate, Covent Garden, Southbank
BISHOPSGATE	1467	2.5	2.0	Yes	Faraday
COLINDALE	225	20	5.5	Yes	All other nodes (except Croydon, Eltham, Ilford, Woolwich)
COVENT GARDEN	937	5	1.5	Yes	Faraday, Bishopsgate, Museum, Southbank
CROYDON	336	10	13.9	No	-
EALING	562	7.5	5.3	Yes	Harlesden
HARLESDEN	218	20	4.1	Yes	All nodes (except Croydon, Ilford, Eltham, Woolwich)
ILFORD	441	10	7.5	Yes	Mile End, Poplar, Woolwich
KINGSTON	385	10	11.5	No	-
MAIDA VALE	173	25	3.8	Yes	All other nodes
MAIN NETWORK ELTHAM	305	15	4.4	Yes	Faraday, Bishopsgate, Covent Garden, Croydon, Ilford, Mile End, Poplar, Woolwich
MILE END	121	25	1.6	Yes	All other nodes (except Watford)
MUSEUM	1101	5	1.6	Yes	Faraday, Bishopsgate, Covent Garden, Maida Vale
POPLAR	2301	1.5	1.6	No	No other nodes within proximity
POTTERS BAR	170	25	12.3	Yes	All nodes (except Croydon, Kingston, Eltham, Woolwich)
SOUTHBANK	950	5	1.9	Yes	Faraday, Bishopsgate, Covent Garden, Museum
WATFORD	364	10	13.3	No	No other nodes within proximity
WOODGREEN	415	10	8.7	Yes	Faraday, Bishopsgate, Colindale, Covent Garden, Maida Vale, Mile End, Museum
WOOLWICH	154	25	4.4	Yes	All nodes (except Ealing, Kingston, Potters Bar, Watford)

Source: Ofcom, November 2008

A7.43 Table A7.2 shows data on the 19 Tier 1 nodes in the London area. It shows the potential circuit sales for each of the 19 London nodes for a “typical” CP (based on estimated service shares). From these volumes, we have determined an appropriate “proximity assumption” for each node using our break-even model. Finally, based on the location of each node relative to other Tier 1 nodes, we have then determined whether or not to combine Tier 1 nodes. For each node, we have considered whether the distance to other nodes is less than the “proximity assumption” for the node in question. If the distance to the nearest node is less than our proximity assumption then this suggests (in principle) that we could group these nodes together. Each of these steps is discussed in turn below.

We adjust volumes at each node to account for potential CP service share

- A7.44 It is important to note that for each Tier 1 node, we are seeking to determine whether an average competitor to BT might interconnect at more than one location in the London area. Clearly, on average, a potential competitor to BT would not achieve 100% share of circuit sales at particular Tier 1 nodes. Therefore, the volumes we have used to assess an interconnection decision for an individual CP is based on the CP in question achieving a 10% share of any particular Tier 1 catchment area.
- A7.45 For example, using data on the Woolwich node, approximately 1,537 wholesale circuits are sold at this node (i.e. from to an end-point in the Woolwich catchment area to an end-point elsewhere in the UK). So we would assume that on average a competitor to BT might only sell 150 circuits in this catchment area.

We use these adjusted volumes to derive proximity assumptions for each node

- A7.46 Based on the estimate volume of circuits a typical CP might sell at each node, we can determine an appropriate proximity assumption for each node. For example, given that the Woolwich node might only serve around 150 circuits, we estimate that it would only be worthwhile interconnecting at the Woolwich node if the distance to the next nearest node was above 25km. Therefore, this result would not suggest Woolwich would be a major interconnection point in the London area.

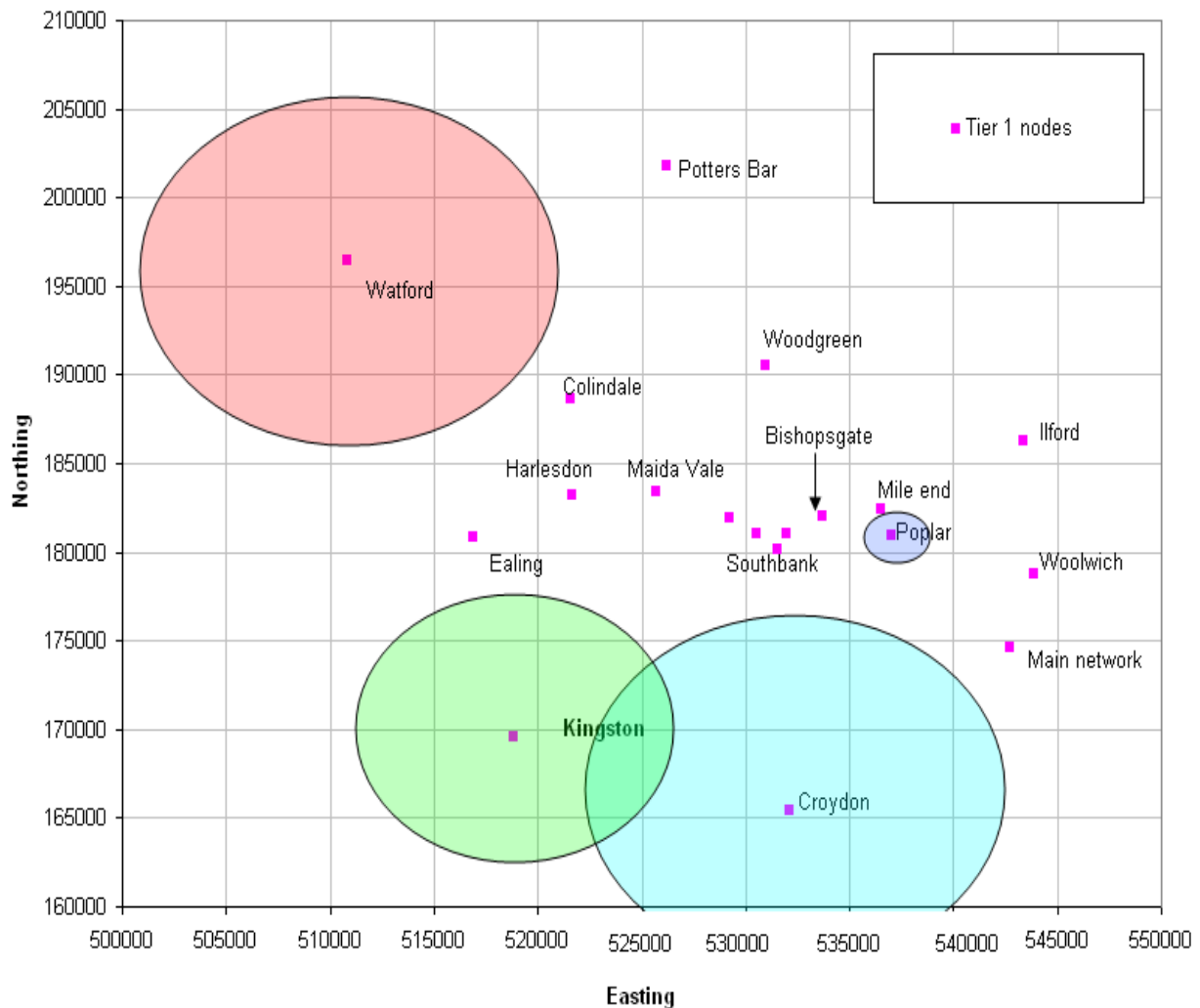
We compare proximity assumptions for each node to other Tier 1 node locations

- A7.47 The next step in the analysis is to compare the proximity analysis to the information we have on other potential interconnection points nearby. For example, if we compared the Woolwich node with the location of other Tier 1 nodes, there are four other nodes nearby to this node, namely: Eltham, Poplar, Ilford and Mile End (between 4.2 km to 8.2km). Given there are four nodes between 4.2 to 8.2km, this analysis would not suggest identifying (in the first instance) Woolwich as a separate node if a CP were already located at another of these nodes. This is because these other nodes (as well as other London nodes) are within the 25km proximity assumption for Woolwich. In other words, the relatively low volumes of circuits and the proximity of other nodes does not suggest it is worthwhile investing in additional interconnection just to serve customers located at the Woolwich node.

Determine the optimal Tier 1 node groupings to determine aggregation nodes

- A7.48 The above proximity analysis provides a view for each Tier 1 node of the other nodes that could in principle be grouped with this node. From the analysis in Table A7.2 above, it was possible to come to a firm view on an initial set of aggregation nodes. This is because there are a number of nodes, such as Watford, Croydon, Poplar and Kingston where our proximity analysis suggests that a CP would locate, irrespective of whether it is located at another nearby node. For example, Table A7.2 shows that the proximity assumption for Watford is 10km and no other Tier 1 node falls within this radial distance. We show this diagrammatically in Figure A7.5 below.

Figure A7.5: Comparison of “proximity assumptions” against Tier 1 node locations



Source: Ofcom, November 2008

- A7.49 In Figure A7.5, we show the nodes that do not have another Tier 1 node within “proximity” to that node. In Figure A7.5 we have shown the (approximate) radial distance around each node, reflecting the proximity assumptions for certain BT Tier 1 nodes. The different radius of each circle reflects the fact that we have different proximity assumptions for each Tier 1 node. Therefore, the above Figure suggests, as a starting point our revised analysis suggests a more disaggregated view of the London market than proposed by our January 2008 consultation. In other words, more than one aggregation node should be identified for the London area (represented, at the very least, by the above nodes).
- A7.50 On the other hand, relative to the existing 2003/04 Review definition our analysis points to a consolidated list of aggregation nodes than the list of 19 Tier 1 nodes. In most cases, the above analysis suggests that there would be at least one other Tier 1 node within “proximity” to that node (see column 6 of Table A7.2 above). This suggests that we should group most Tier 1 nodes with at least one other node (and potentially more than one).
- A7.51 We highlighted above that we can come to a firm view on an initial list of aggregation nodes (Croydon, Kingston, Poplar and Watford). But, even if a CP

located at each of these points, it would not necessarily follow that it would backhaul all other traffic served in the London area to one of those interconnection points. In other words, it would also be optimal for a CP to locate at another interconnection point (in addition to Croydon, Kingston, Poplar and Watford).

- A7.52 Therefore, in addition, to our initial list of potential aggregation nodes, we had to consider a number of alternative additional points, where it could also be optimal for a CP to locate. Deciding which additional Tier 1 nodes formed aggregation points was a potentially complex task, as some groupings of Tier 1 nodes would be more efficient than others. We therefore needed a way to find the lowest-cost grouping from all potential groupings.
- A7.53 For example, the proximity analysis would suggest that we might group Harlesden and Faraday, where a CP chose to interconnect at this latter node. There are however numerous other nodes that might be within proximity to the Harlesden node (in fact only Croydon, Ilford, Eltham, Woolwich were not within proximity of this node). A CP might choose to interconnect at one of these other Tier 1 nodes within proximity to the Harlesden node. If this node were nearer than Faraday, then it is likely to be optimal for the CP to backhaul to this new interconnection point rather than groom its traffic via the Faraday node. For example, in the case of Harlesden, if a CP also chose to interconnect at the Ealing node, it could be optimal to backhaul circuits served by the Harlesden area to this new point.
- A7.54 The decision over which nodes to group together was therefore a complex task. Many Tier 1 nodes could potentially fall within a number of other nodes to form aggregation nodes, so there were a number of permutations to consider. This additional layer of complexity meant that we had to go through a number of iterations to identify appropriate number of aggregation points, and to find a final list that resulted in the “optimal” grouping of nodes. We discuss below the process we used to identify this final list.

Identification of the final list of aggregation nodes

- A7.55 We have explained below each stage of this analysis we used to find the final list of aggregation nodes. For each Stage, we have explained the purpose of the analysis; an example of how we applied each stage; and the final aggregation nodes implied by each stage.
- **Stage 1:** we took as our starting point the nodes where the proximity analysis definitively suggested a CP would interconnect. As shown in Figure A7.5, these were the nodes where there are no other Tier 1 nodes within “proximity”, so that no matter where else in London a CP might choose to interconnect, a CP would still seek to have an aggregation point at these initial nodes.

Output from Stage 1: Croydon, Kingston, Poplar, Watford

- **Stage 2:** based on the nodes identified under stage 1, we then identified any nodes that we thought we could group with the initial nodes. At this stage, however, we only identified one node (Mile End) that we would unambiguously group with one of the initial nodes. For other nodes there was the possibility that there could be another node nearer than one of the “initial nodes” under Stage 1. Therefore, at Stage 2 in our analysis we only grouped together nodes that where we were certain this would not be affected by the identification of other

aggregation points. If we identified additional aggregation nodes in subsequent stages of our analysis below, it could be more optimal to backhaul traffic to this aggregation point than to one of the “initial nodes” under Stage 1.

Output from Stage 2: Docklands node (consisting of Poplar and Mile End)

- **Stage 3:** following stages 1 and 2, we had a number of unallocated nodes. In many cases, our analysis suggested that a CP would select at least one of these locations as an additional interconnection point (as the volumes of circuits at the unallocated nodes suggested a CP would not backhaul traffic to one of the “initial nodes” identified under Stage 1). For these nodes, we therefore had to identify another Tier 1 location that might also be an additional interconnection point. To identify this additional interconnect point, we chose the node that served the highest volume of TI circuits.

Output from Stage 3: Central London node (consisting of Faraday)

- **Stage 4:** we then further grouped any unallocated nodes that were within proximity to the additional interconnection point (the Faraday node) provided that this node was nearer than other possible interconnection points.¹²⁰

Output from Stage 4: Central London node (consisting of Faraday, Bishopsgate, Covent Garden, Maida Vale, Museum and Southbank)

- **Stage 5:** we still had some “residual” unallocated nodes after Stages 1-4. One set of these unallocated nodes were nodes that were not within “proximity” to any of one of the aggregation nodes above (i.e. Central London, Docklands). Under Stage 5, we identified these nodes as additional interconnection points (and similar to Stage 4 we would group any other relevant nodes with this additional interconnection point).

Output from Stage 5: West London node (consisting of Ealing, Colindale, Harlesden)

¹²⁰ Even though the Faraday node was in proximity to some of the unallocated nodes, similar to Stage 2, we could not be certain that it was that most “optimal” outcome (i.e. this could depend on which other interconnection points were identified under Stage 5).

- **Stage 6:** the remainder other type of “residual” unallocated nodes were those nodes that could in principle be allocated to one of the aggregation nodes above (i.e. Central London, Docklands). On the other hand, as these unallocated nodes were located in North and East London, we thought that it could be optimal to have at least one interconnection points serve each area. We therefore assessed whether, for the remainder unallocated nodes, it would be optimal for a CP to serve these areas by having additional interconnection points rather than backhauling all of that traffic to an existing interconnection point (i.e. one of the aggregation nodes already identified under Stages 1-5)¹²¹.

North London node (consisting of Potters Bar, Woodgreen); East London node (consisting of Ilford, Eltham, Woolwich).

A7.56 Table A7.3 below summarises the final outputs of our analysis as reflected in the discussion above.

Table A7.3: Aggregation nodes and associated Tier 1 nodes

AGGREGATION NODE	CURRENT TIER 1 NODES
LONDON CENTRAL	LONDON FARADAY
	LONDON SOUTHBANK
	LONDON BISHOPGATE
	LONDON COVENT GARDEN
	LONDON MAIDA VALE
LONDON WEST	LONDON MUSEUM
	LONDON COLINDALE SSC
	LONDON EALING SSC
LONDON EAST	LONDON HARLESDEN
	LONDON ILFORD SSC
	LONDON MAIN NETWORK ELTHAM RS
LONDON DOCKLANDS	LONDON WOOLWICH
	LONDON MILE END
LONDON NORTH	LONDON POPLAR
	LONDON POTTERS BAR
CROYDON	LONDON WOODGREEN SSC
KINGSTON	LONDON CROYDON SSC
WATFORD	LONDON KINGSTON SSC
	LONDON WATFORD HERTS

Source: Ofcom, November 2008

A7.57 Although the above results were derived using a detailed “bottom-up” modelling approach, intuitively the outputs of this analysis seem credible and logically consistent with our overall evidence on business density. For example, for the London Central node, the very high volumes of circuits at the Tier 1 nodes in this location suggest that this would be a key interconnection point. And if a CP located at a interconnection point close to (or at) the Faraday Tier 1 it would also backhaul traffic from customers in the Covent Garden and Southbank, Museum and

¹²¹ We assessed whether, for the remainder unallocated nodes, we could identify new interconnection points and group them together as aggregation nodes in preference to grouping these unallocated nodes to aggregation nodes already identified under previous stages (i.e. Central London, Docklands, Watford and Croydon). For the remainder nodes: Potters Bar, Woodgreen and Eltham, Ilford, Woolwich, we identified two broad groupings. For example, Potters Bar and Woodgreen could form a NORTH LONDON and node. We assessed, if we combined the traffic served by both these nodes what the resulting proximity assumption would be (i.e. What traffic would an OCP capture if it located an additional aggregation node to serve this area). This would result in a proximity assumption of 7.5km. As the nearest other aggregation node would be Faraday was further than this distance, this justified an additional aggregation point to pick-up traffic associated both nodes in North London.

Bishopsgate areas. On the other hand, even with relatively short distances between nodes in the Central and Docklands area, the Poplar node has the highest circuit volumes of all London nodes. On the basis of the volumes in the two areas, we would therefore expect interconnection both in the Docklands and Central London. Following the approach discussed above, as shown in Table A7.4, our modelling also suggested identification of an East London node (comprising Woolwich, Eltham and Illford); North London (Potters Bar with Woodgreen) and Docklands (Poplar and Mile End).

- A7.58 We therefore consider that the outputs of our analysis yield a credible set of aggregation nodes. Nevertheless, we have assessed below wider evidence to ensure that the above results correlate with actual interconnection information. We have also discussed below the sensitivity of our results to different input assumptions.

Sensitivity of results to different assumptions

- A7.59 The model we used to derive a relevant “proximity assumption” for each Tier 1 node does depend on the relevant assumptions made on the relative costs of access and backhaul (as discussed in Box A1). In terms of how this would affect our proposed list of aggregation nodes, we consider below the impact of increasing (decreasing) the costs of terminating segments (relative to trunk).

Impact of reduced costs of terminating segments

- A7.60 If we were to reduce the costs of terminating segments, this would result in a more consolidated view of aggregation nodes. This is because a decrease in terminating segment prices would reduce the benefits of grooming traffic sooner onto a CP’s trunk network (i.e. it would be relatively cheaper to backhaul to an existing interconnection point).
- A7.61 We conducted sensitivity analysis by halving the distance-based element of costs of terminating segments. The impact of this sensitivity is that we would identify fewer aggregation nodes but there would still be more than one aggregation node in the London area. For example, the analysis suggests identifying a single South London node (e.g. Croydon and Kingston) and a combined Docklands and East London aggregation node. We would still however identify separate aggregation nodes serving London West, Central and North. Therefore, this sensitivity scenario would yield fewer aggregation nodes (but would not get us as far as a single aggregation node).

Impact of increase relative costs of terminating segments

- A7.62 Increasing the relative costs of terminating segments, for example by increasing the distance-based element of a terminating segment, would make additional interconnection a more attractive proposition. We looked at this sensitivity scenario by doubling the distance-element of our terminating segment costs. Under this sensitivity, even though we found many more interconnection points, we still found that some aggregation would be worthwhile. . In particular, we would still identify Central London, Docklands and West London nodes, each including more than one Tier 1 node.
- A7.63 In conducting the above sensitivities, the results suggest that we could come to an alternative view of the precise number of aggregation nodes. However, even with relatively large changes in the input assumptions, the sensitivity analysis still

suggest more than one aggregation node for the London area. But it also suggests moving away from the existing 2003/04 Review trunk definition, which would suggest all Tier 1 nodes as interconnection points. In other words, some degree of consolidation in the number aggregation nodes is justified.

- A7.64 Our view of London aggregation nodes was based on our “base case” assumption as we think these provide the most accurate available view of the relative costs of trunk and terminating. However, we recognise that there are limits, in any case to such a modelling exercise. There are many detailed factors that influence operators’ build decisions and costs and we cannot expect to capture all of these issues in a generic cost model. To address this concern, we have therefore assessed below wider evidence to ensure that other market data supports the results generated by our “bottom-up” modelling.

Correlation of the results with actual CP interconnection

- A7.65 In the discussion below, we have presented our assessment of the evidence on actual CP interconnection that has taken place. However, in considering this evidence we note that we would not anticipate a perfect correlation between our aggregation node proposals and interconnection. This is because some CP interconnection investment is now largely sunk and occurred in the past (potentially under different market circumstances). In addition, over the past four years, BT relative pricing of trunk and terminating segments has potentially distorted some CPs’ interconnection decisions. For example, an initial examination of the relative differences in the price of trunk and terminating segments do not suggest that these are in line with relative cost differences. Given that trunk has been relatively more expensive than terminating this could have prompted greater levels of interconnection than would have otherwise been the case.¹²².
- A7.66 Nevertheless, the available evidence tends to confirm our proposed list of aggregation nodes. Table A7.4 below provides an indicative view on the degree of interconnection by CPs. A tick in the table below indicates that the CP is located within “reach” of the corresponding BT Tier 1 node.

¹²² However, the account that particular CPs’ have taken of BT’s current pricing is not clear-cut, as a large amount of investment in traditional interface markets occurred some time ago. One CP has highlighted to us that it generally bases investment decisions on the future expectations over the regulation of BT’s prices rather than on current price so that its investment decisions are sufficiently forward-looking,

Table A7.4: CP with POP located within “reach” of Tier 1 nodes

	CP1	CP2	CP3	CP4	CP5	CP6	TOTAL
LONDON MILE END	x	x	x	x	✓	x	1
LONDON BISHOPGATE	✓	x	x	✓	✓	x	3
FARADAY	✓	✓	✓	x	✓	✓	5
LONDON POPLAR	x	x	✓	x	✓	✓	3
LONDON HARLESDEN	x	x	✓	x	✓	x	2
LONDON MAIDA VALE	x	x	x	x	✓	x	1
LONDON MUSEUM	✓	✓	✓	✓	✓	✓	6
LONDON SOUTHBANK	✓	✓	✓	✓	✓	✓	6
LONDON COVENT GARDEN	✓	✓	x	✓	x	x	3
LONDON COLINDALE SSC	x	x	x	x	✓	✓	2
LONDON EALING SSC	✓	x	✓	x	✓	✓	4
LONDON MAIN NETWORK ELTHAM RS	x	x	x	x	✓	✓	2
LONDON ILFORD SSC	✓	x	x	x	x	✓	2
LONDON WOODGREEN SSC	x	✓	x	✓	x	✓	3
WOOLWICH	x	x	x	x	✓	x	1
LONDON POTTERS BAR	x	x	x	x	x	✓	1
LONDON CROYDON SSC	✓	✓	✓	✓	✓	✓	6
LONDON KINGSTON SSC	x	x	✓	x	✓	✓	3
LONDON WATFORD HERTS	✓	x	✓	x	x	✓	3

Source: Ofcom, November 2008

A7.67 In the above table, we have highlighted the key Tier 1 nodes where some of the largest operators serving the London area are apparently interconnected (based on the operator being within 1km reach of a particular BT Tier 1 node). For the most part, the key interconnection points tend to correlate quite well with the locations we identified using our proximity analysis above. In particular, there appears to be multiple CPs located at Croydon, Kingston, Poplar and Watford. In addition, the location of at least three CPs in Ealing and Woodgreen is consistent with our findings of aggregation nodes for West and North London.

A7.68 It is less clear from the above interconnection information that there are as many CPs located at individual Tier 1 nodes in East London. For example, only two CPs appear to be interconnected at the Ilford and Eltham nodes. However, three CPs are interconnected with at least one of the East London nodes (Woolwich, Ilford or Eltham) and two of those CPs are interconnected at two of these three nodes. Indeed, if all traffic served by these locations is taken together, it is likely that it would merit definition of a separate aggregation node (as interconnection here would be more efficient than backhauling all CP traffic to another nearby potential key interconnection point such as Poplar). As such, the above evidence suggests that a number of OCPs are located at one or more East London nodes. We think that this is therefore consistent with our proposed identification of a separate aggregation point covering the East London area.

A7.69 The above suggests that CPs have interconnected at more than one Tier 1 node within the area covered by the Central London aggregation node (e.g. there are 5-6 interconnection points within reach of the Faraday, Southbank and Museum Tier 1 nodes). However, given the close proximity of all of these Tier 1 nodes to each other, a CP could easily locate at a single point in Central London and still be within economic reach of a number of nodes. From this single interconnection point, a CP could be in sufficient proximity to all of these Tier 1 nodes to pick up traffic from any of these locations.

A7.70 In general, the above evidence does not suggest that there would be systematically more interconnection than predicted by our model. The main question mark relates to the Central London area. As we stated at the outset, we did not expect a perfect correlation between interconnection and our aggregation node proposals. In any case, as we explained above, it is possible that in some locations it may be more economic for competing operators to install their own backhaul capacity within an aggregation node. Therefore, this evidence is not necessarily inconsistent with the proposal for a single Central London aggregation node.

Correlation of the results with BT's 21CN rollout

A7.71 In our discussions with BT, it highlighted that it was intending to rollout a number of metronodes on its 21CN network. Broadly speaking, metronodes would be the "21CN-equivalent" of Tier 1 nodes in the network hierarchy. Our understanding is that BT's traditional interface services, initially at least, will continue to be supported via the SDH/PDH network, therefore TI services will not be supported on BT's NGN (although they may well migrate in the long-run). Nevertheless, we are considering BT's metronode rollout in the context of Traditional interface markets, as the 21CN design has given BT an opportunity to reconsider where exactly it might be optimal to locate key interconnection points. Its network design decisions will be influenced to some degree by business traffic particularly in central London (as there is a relatively high concentration of business customers). We have therefore considered this evidence in our assessment of aggregation nodes.

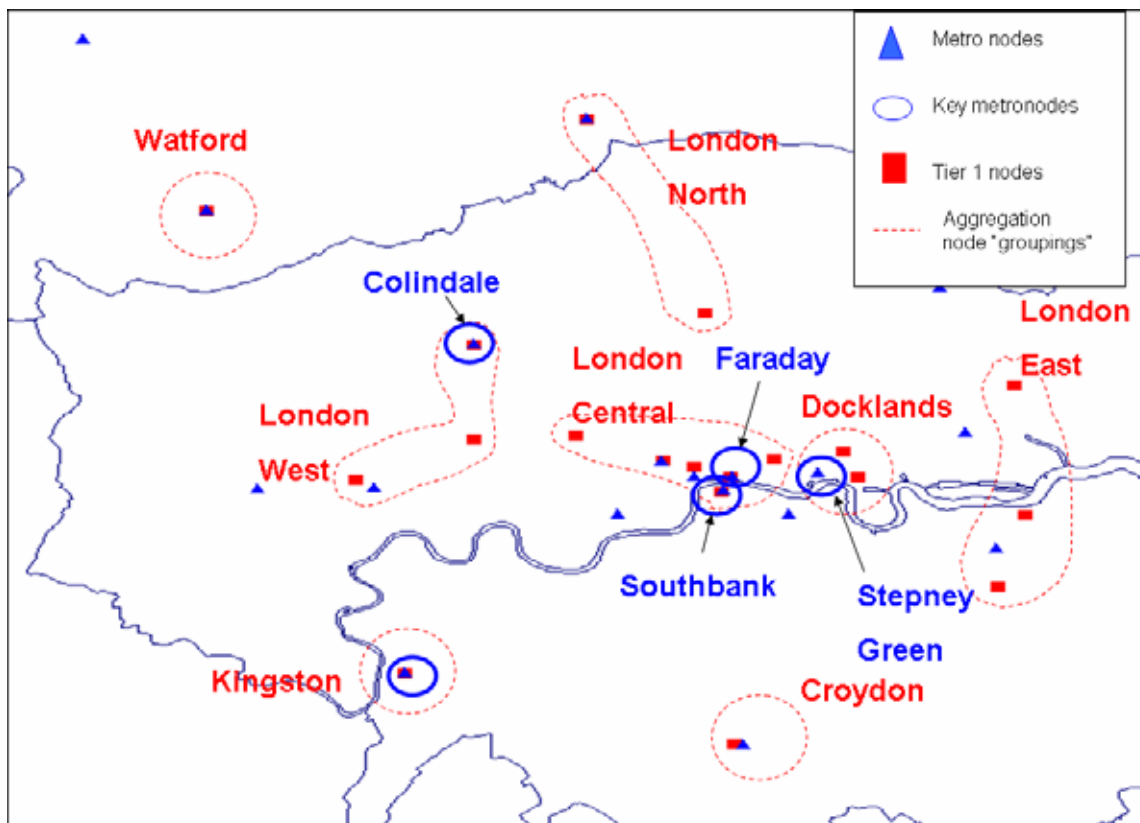
A7.72 In examining BT's decisions to locate metronodes for its 21CN, we need to exercise a degree of caution, however, as the location of these nodes is unlikely to have been driven only by consideration as to where leased lines traffic is concentrated. For example, BT is likely to also use metronodes for broadband and voice interconnection. Hence, reflecting the additional aggregation opportunities associated with the 21CN network, we might expect some variations between our aggregation node proposals and BT's 21CN nodes.

BT's 21CN rollout plans in the London area

A7.73 For the London area, BT's rollout plans indicate a sub-set of its metronodes that it considered would be key aggregation points. These key metronodes are among the smaller number of around 20 "outer-core" metronodes.

A7.74 According to BT, the key nodes for the Central and Greater London area would include Colindale, Faraday, Southbank, Stepney Green and Kingston. We have shown the location of these "key" metronodes against our aggregation node proposals.

Figure A7.6: Location of Metro nodes versus Tier 1 nodes



Source: Ofcom, November 2008

A7.75 In Figure A7.6 above, we have shown the aggregation nodes groupings of Tier 1 nodes as represented by the dotted red line¹²³. The information presented above suggests that the “key” metronodes that BT has identified (represented by blue circles), tend to coincide with our aggregation nodes. For example, BT has proposed “key” metronodes in Stepney Green and Colindale, which coincide respectively with the Docklands and London West aggregation nodes.

A7.76 Therefore, we think that BT’s identification of key network points is broadly consistent with the view we have taken on relevant aggregation nodes. The key difference to our aggregation node proposals is that BT has identified separate nodes for both Faraday and Southbank. However, we do not think we should alter our aggregation node proposals. The nodes in question are in such close proximity (less than 1km) and our proximity model would require extremely high circuit volumes to justify interconnecting at both nodes.¹²⁴ This would suggest re-visiting our model for other nodes as well, which would potentially yield many more aggregation nodes.

¹²³ The boundary we have drawn is only intended to indicate which Tier 1 nodes are included in each aggregation node (i.e. the dotted line is not intended to reflect precise aggregation node boundaries).

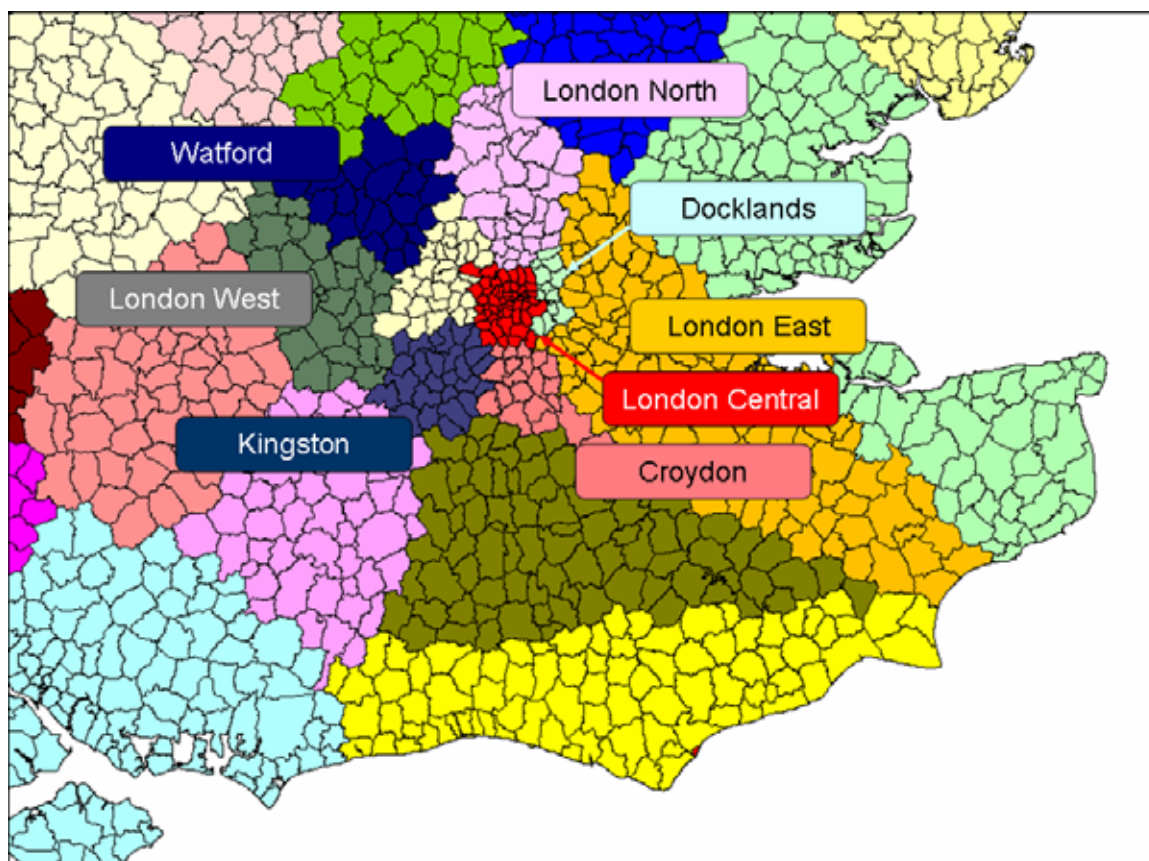
¹²⁴ Indeed, under our proximity analysis, the only scenario where we might identify Faraday and Southbank as separate nodes is where terminating costs are more than double the level we used in our base case. However, this cost scenario would also mean that CPs would be interconnected at virtually all Tier 1 nodes, which is not supported by our interconnection evidence above or the number of PPC circuits sold with trunk (as defined under the LLMR 2004).

A7.77 As we note above, BT’s metronode rollout will also depend on additional traffic opportunities for broadband and voice, so there are likely to be some differences between “key” metronodes and the TI aggregation nodes. But overall, when taking this into account, we think that BT’s metronode plans are broadly consistent with the aggregation nodes we have identified.

Conclusions on aggregation nodes for the London area

A7.78 In the above discussion, we explained why we think it is appropriate to adopt a more disaggregated view for the London area than suggested in our January 2008 consultation. We have therefore identified five aggregation nodes for inner London comprising: Central London, Docklands, and London East, London North and London West. We have also identified separate aggregation nodes in Greater London: Croydon, Kingston and Watford. Figure A7.7 below shows how our aggregation node proposals would be reflected in terms of the relevant aggregation node catchment areas (NB: this diagram is based on BT’s views on how it currently parents each postal sector to its Tier 1 nodes).

Figure A7.7: Final London TI aggregation nodes



Source: BT, November 2008

Part 2: Scope of the AI market

A7.79 The second part of this Annex considers the list of aggregation nodes that we should identify to inform us of the scope of the AISBO market. First, we explain below why we think it is appropriate also to apply aggregation nodes concept to the AISBO market. Second, we explain why we have taken, as the starting point for this analysis, the aggregation nodes we identified for the TI market (TI aggregation nodes). However, we also examine differences between the two markets that might suggest that we should not apply the TI aggregation nodes to the AI market in exactly the same way. In particular, we explain that the larger number of metronodes and greater opportunity to aggregate AISBO traffic with other types of traffic suggests that there should be a greater number of “AI aggregation nodes”. In the final part of this Annex, we therefore consider additional aggregation nodes and/or variations to our TI aggregation node proposals.

Why the aggregation nodes concept is applicable to AI markets

A7.80 For similar reasons seen in the TI market where CPs have historically not interconnected at all 67 Tier 1 nodes, OCPs are unlikely, initially at least, to interconnect at the full 106 metronodes. In the TI trunk market, we have explained that OCPs require sufficient aggregation opportunities to make it worthwhile to interconnect at BT Tier 1 nodes. The same will apply in the case of the AI market, where OCPs decisions over where to interconnect will also be informed by the points on the network where the key aggregation opportunities exist.

A7.81 As such, an OCP is unlikely to locate interconnection points in remote metronode locations where business traffic is more limited. Where CPs cannot generate sufficient scale to roll-out their networks, they will be reliant on BT to provide those services (as seen in our SMP assessment in Section 7). Therefore, we think that is appropriate to frame the scope of the AISBO market on likely aggregation opportunities (based on the identification of aggregation nodes).

Use of TI aggregation nodes for the AISBO market

A7.82 As our starting point for analysing aggregation nodes for the AISBO market, we have considered whether it appropriate to adopt the list of 46 aggregation nodes used to identify the break point between TI trunk and TISBO.

A7.83 The rationale for adopting this approach is our expectation that, on the forward-looking basis, the key points where demand for leased lines terminating segments exist should not differ fundamentally for AI and TI services. In the most part, our analysis suggests that the aggregation nodes for the TI market reflect the key urban areas where businesses reside. A number of these business customers in these areas may migrate from TI service or start demanding AI services in future. Therefore, the aggregation nodes for the TI market (which reflects where business traffic is most concentrated) would appear to be a good starting point for AI markets.

A7.84 However, there are some differences between the two markets. In particular, BT proposes to employ around 106 metronodes in the AI market. This compares to the 67 Tier 1 nodes, which helped inform our list of aggregation nodes for the TI market. And in some areas, in particular in London, BT is also retiring some of its Tier 1 nodes, which will potentially reflect BT’s re-assessment of the most optimal aggregation nodes for AI services. Some differences in the demand for AISBO services still exist and this could impact on where CPs would find it optimal to

interconnect. In addition, metronodes will also support other forms of traffic including broadband and voice interconnect services (so for some industry players the aggregation opportunities will potentially be much larger).

Assessing which TI aggregation nodes to use

A7.85 As a first stage, to assess whether using existing TI aggregation nodes would provide a useful starting point for the AI market, we have considered the distance of BT's proposed metronodes to the nearest existing Tier 1 node. Table A7.5 below shows how closely the new metronodes map onto our identified TI aggregation nodes.

Table A7.5: Proximity of metronodes (km) to Tier 1 nodes located within TI aggregation nodes

Ofcom proposed "Aggregation nodes"	Metro nodes	Distances	Ofcom proposed "Aggregation nodes"	Metro nodes	Distances
ABERDEEN	ABERDEEN CENTRAL	0.0	LONDON DOCKLANDS	STEPNEY GREEN	1.6
	INVERNESS MACDHUI	133.4		KIDBROOKE	2.2
BISHOPS STORTFORD	BISHOPS STORTFORD	0.0	LONDON EAST	UPTON PARK	3.4
BIRMINGHAM	BIRMINGHAM CENTRAL	0.1		WOODFORD	6.4
	BIRMINGHAM MIDLAND	0.8		HORNCHURCH	10.7
	ERDINGTON	0.3		MAIDSTONE	38.3
	BM PERRYFIELDS (BROMSGROVE)	19.9		ASHFORD	66.2
BRIGHTON	BRIGHTON HOVE	2.4	LONDON NORTH	POTTERS BAR	0.0
BRISTOL	BRISTOL REDCLIFFE	0.3	LONDON WEST	COLINDALE	0.0
	BEDMINSTER	1.6		EALING	0.9
	YEOVIL	56.9		SOUTHALL	4.0
	EXETER CASTLE	104.0	LEICESTER	LEICESTER MONTFORT	0.8
	PLYMOUTH	161.9	LUTON	LUTON ATE / TOWER BLOCK	0.0
	TRURO	217.9	LEEDS	LEEDS (3)	1.0
	CROYDON	CROYDON		0.3	BRADFORD (2)
CAMBRIDGE	CAMBRIDGE TRUNKS	0.0		PONTEFRACT	20.2
CARLISLE	PETERBOROUGH WENTW	47.8	LIVERPOOL	LIVERPOOL CENTRAL	0.0
	CARLISLE	0.1		BANGOR (WALES)	78.7
CARDIFF/ NEWPORT	KENDAL	63.7		WREXHAM GROSVENOR	40.3
	CARDIFF	0.1		DIAL HOUSE (MANCHESTER)	0.0
	NEWPORT (GWENT)	0.3	PENDLETON	2.6	
	SWANSEA	55.0	OLDHAM	10.7	
	BRIDGWATER	40.9	BOLTON	16.1	
CHELMSFORD	ABERYSTWYTH	117.3	MILTON KEYNES	MILTON KEYNES	0.0
	CHELMSFORD TOWN	0.1	BEDFORD TOWN	23.0	
COVENTRY	SOUTHEND ON SEA	26.9	NOTTINGHAM	NOTTINGHAM LONGBOW	0.0
	COVENTRY GREYFRIAR	0.0	DERBY	23.1	
CLYDE VALLEY/ GLASGOW	LEAMINGTON SPA	12.4	NORTHAMPTON	NORTHAMPTON	0.1
	GLASGOW CENTRAL	0.0	NEWCASTLE	NEWCASTLE CENTRAL	0.3
	GLASGOW DOUGLAS	0.8		SOUTH SHIELDS	11.2
FALKIRK	26.9	DARLINGTON		49.8	
CRAWLEY	CRAWLEY	0.0	OXFORD	OXFORD CITY	0.0
	TUNBRIDGE WELLS	31.2	PRESTON	PRESTON (LANCS)	0.1
DONCASTER	DONCASTER	0.0	PORTSMOUTH/ SOUTHAMPTON	COSHAM	0.3
	LINCOLN	51.6		SOUTHAMPTON	0.1
EDINBURGH	EDINBURGH DONALDSON	1.1		BOURNEMOUTH	38.6
GLOUCESTER	DUNDEE TAY	57.9	READING	BRACKNELL	15.0
	GLOUCESTER	0.0	BASINGSTOKE/BOUNTY	21.9	
GUILDFORD	GUILDFORD/MARTYR	0.1	SALISBURY	SALISBURY	0.1
	IPSWICH TOWN	0.0	SHEFFIELD	SHEFFIELD CUTLER	0.2
IPSWICH	COLCHESTER TOWN	25.4	CHESTERFIELD	15.5	
	NORWICH CITY	64.4	SLOUGH	SLOUGH	0.6
	IRVINE	0.0	HIGH WYCOMBE	17.4	
IRVINE	BELFAST/CITY	141.2	SWINDON	SWINDON	0.0
	BELFAST/SEYMOUR	141.2	WARRINGTON	ASHTON IN MAKERFIE	11.8
	PORTADOWN	175.5		NORTHWICH	15.6
KINGSTON	KINGSTON	0.0		STOKE TRINITY/POTT	48.9
LONDON CENTRAL	COVENT GARDEN	0.0	WATFORD	WATFORD	0.0
	FARADAY TE (Moorgate)	0.1		HEMEL HEMPSTEAD	11.1
	SOUTHBANK	0.1	WOLVERHAMPTON CENT	0.0	
	BT TOWER WESTBLOCK	0.1	WALSALL CENTRAL	10.5	
	SOUTH KENSINGTON	3.6	SHREWSBURY	44.0	
	BERMONDSEY	3.0	YORK	MALTON	27.0

Key:	0 - 10 km
	10-15km
	15-25km
	>25km*

* Circuits > 25 km allocated to the nearest overland "Aggregation Node"

Source: Ofcom, November 2008

A7.86 The above table considers the distance of BT’s metronodes to the nearest overland Tier 1 node.¹²⁵ The above table shows that in more than one third of metronodes are at the same location as a Tier 1 node or in very close proximity (with most within 0-500 metres). Only 3 out of the 46 TI aggregation node locations we identified (York, Reading and Warrington) would not have a metronode located at a (near

¹²⁵ In the case of Northern Ireland nodes, there is no overland aggregation node nearby, so we have mapped these nodes to the nearest aggregation node location using radial distances.

identical) point to an aggregation node (in each case these 3 nodes are more than 10km away).

- A7.87 For the most part, however, more than half of the metronodes considered in the table above (67) would be less than 15km to an existing Tier 1 node. The above analysis shows that 77 metro nodes (out of a possible 106 metronodes) would fall within 25km reach of at least one Tier 1 node situated within an existing aggregation node. The significance of the 15-25km figures is that it provided the appropriate range used to combine Tier 1 nodes in close proximity (outside of the London area). Hence, if we applied the range of proximity assumptions used in for identifying TI aggregation nodes (15km – 25km depending on location outside of London) then the majority of metronodes would fall within reach of an existing aggregation node.
- A7.88 From the above list of 46 TI aggregation nodes, we propose to identify 38 AI aggregation nodes as the above evidence suggests for these nodes that there is a metronode within 5-10km (and in many cases less than 500 metres). For the remainder 8 aggregation nodes (out of our list of 46 aggregation nodes), we have first examined how we should treat the 3 aggregation nodes where there is not a metronode in the immediate vicinity of that node. The other 5 aggregation nodes relate to the London area, which we have looked at in further detail in paragraphs A7.117 to A7.119 below. Finally, we consider whether we should identify any other AI aggregation nodes (in addition to the list of 46 suggested by our TI aggregation nodes).

Metro nodes that do not map closely to the TI aggregation nodes

- A7.89 While there are a number of cases where the metronodes map quite well onto our proposed aggregation nodes this does not appear to apply universally. These nodes seem to fall into two categories, where:
- BT has apparently “re-located” the main node used to serve a particular area (e.g. the York Tier 1 node used to serve the East Yorkshire area is 27km from the nearest metronode(Malton)); or
 - BT has identified “new nodes” additional to its existing nodes, so more than one node will now serve a particular region, for example in South East and South West these areas were typically only served by a single Tier 1 node (Eltham and Bristol respectively) whereas there are now many more metronodes serving these locations.
- A7.90 We discuss how we have incorporated these differences in our TI aggregation nodes and metronodes into our analysis.

“Re-location” of nodes

- A7.91 There appear to be 3 main TI aggregation node locations (York, Reading and Warrington) where the nearest metronode to serve a particular location is no longer within close proximity (Malton, Bracknell, and Ashton respectively).
- A7.92 In the case of East Yorkshire, BT’s Tier 1 node situated within the York aggregation node would serve this area. If a CP were to interconnect at a BT metronode to pick-up Ethernet traffic, the nearest metro node to serve this area would be in Malton (27km from the York aggregation node). In effect, BT has changed the location of the network node it uses to serve the region.

- A7.93 BT's decision to locate at a metronode in Malton might suggest that, in its view, this location is better placed to serve AI traffic in the East Yorkshire area. This could be because, on average, business sites would be nearer to the Malton node. This assumes, however, that BT's decision to identify a new Malton metronode has been optimised solely for alternative interface traffic. In practice, BT's decisions over metronode locations will also be driven by the location of residential voice and/or broadband traffic as well as geographic factors (e.g. for the York area there are potential flooding risks).
- A7.94 It is possible that the York node would be a more efficient location if the CP wanted to interconnect solely to pick-up leased lines traffic. Therefore, the York TI aggregation node (centred around the existing Tier 1 node location) might be a more appropriate interconnection point. On the other hand, as we discussed in Section 5, many leased lines providers also have broadband customers (including both business and residential). Therefore, a CP may require sufficient traffic from all of these traffic streams in order to justify interconnection and to serve Ethernet markets competitively. If this is the case, then the Malton metronode may be the only viable interconnection point. This is because this point would better reflect where the CP can exploit relevant economies of scale and scope by combining leased lines, voice and broadband traffic streams.
- A7.95 We have concluded that it is appropriate to include the new metronode location as the relevant aggregation node for AI markets. We anticipate that metronodes will be the key points (although not necessarily the only place) where CPs will interconnect to pick-up AISBO traffic, including for LLU backhaul. By contrast, we anticipate that going forward Tier 1 nodes will still be the key interconnection points used to pick-up TI traffic (although in line with our aggregation nodes definition this is generally likely to be at a single Tier 1 nodes serving a particular urban centre).
- A7.96 However, we want to ensure that OCPs that have existing interconnection points with BT are not disadvantaged by BT's decisions to relocate major network points (and that were picking up Ethernet traffic at Tier 1 node locations). The reason for adopting the aggregation nodes concept was that it would not be as dependent on where BT had decided to locate major network points (rather we wanted to base our definition, as far as possible, on where key aggregation opportunities reside). However, as stated in paragraphs 6.116 to 6.117 of the January 2008 consultation, we cannot divorce our market definition entirely from the location of BT's network nodes. In many cases, CPs are reliant on BT for the provision of access and backhaul and this suggests that their network build decisions will relate closely to the location of BT's network nodes. Going forward there will not be a metronode in York.
- A7.97 Therefore, we would propose to use the new metronode locations (Malton, Bracknell, and Ashton) as the relevant key aggregation points for serving York, Reading and Warrington areas. This would mean, for example, that BT's obligations in the East Yorkshire area would require it to provide AISBO circuits up to the nearest metronode (at Malton).

Additional metronode locations

- A7.98 Another issue is that there are a number of new metronodes that are not in close proximity to any one of our 46 aggregation node (for example Inverness would be 133km to the nearest identified aggregation node located at the Aberdeen aggregation node). Similarly, there are a number of metronodes in Northern Ireland (two in Belfast and Portadown) where the nearest aggregation node would be in

Irvine (in Scotland), over 140 km from Belfast. These nodes were highlighted in yellow in Table A7.5 above.

- A7.99 If we did not identify additional aggregation nodes then this would require BT to provide all AISBO circuit to the nearest of the 46 aggregation node locations (as set out in Table A7.5 above). Retaining the list of TI aggregation nodes for the AISBO market would mean that there could be potentially very long backhaul segments. For example, this would potentially result in BT having a requirement to provision AISBO circuits up to 133km from Inverness and Aberdeen.
- A7.100 However, the requirement on BT to provide AISBO circuits over relatively long-distances could be an entirely appropriate outcome if a lack of aggregation opportunities suggests that BT has SMP. Such a requirement already exists in relation to BT providing PPCs. If there is very limited business traffic associated with Inverness, then it is likely that Aberdeen-Inverness route would not provide sufficient aggregation opportunities to a CP for the AI market. In these circumstances, it would be appropriate to treat the Inverness-Aberdeen route as a terminating segments.
- A7.101 By contrast, if we identified Inverness as a new metronode, we would potentially limit the availability of regulated AISBO services, which are intended to address competitive barriers to OCPs self-supplying those services. And if the available economies of scale also prevent other CPs from investing in trunk network then it is likely that they will be reliant on BT. On this basis, BT's obligation for terminating segments should extend beyond a requirement to provide terminating segment from an end-user to the nearest metronode (e.g. the Inverness node).
- A7.102 To assess this issue further we have looked in more detail at a number of additional "remote" metronodes (i.e. those that do not coincide with the list of 46 aggregation nodes). This analysis considers whether available aggregation opportunities would merit the identification of additional metronode locations as aggregation nodes.

Identifying new aggregation nodes

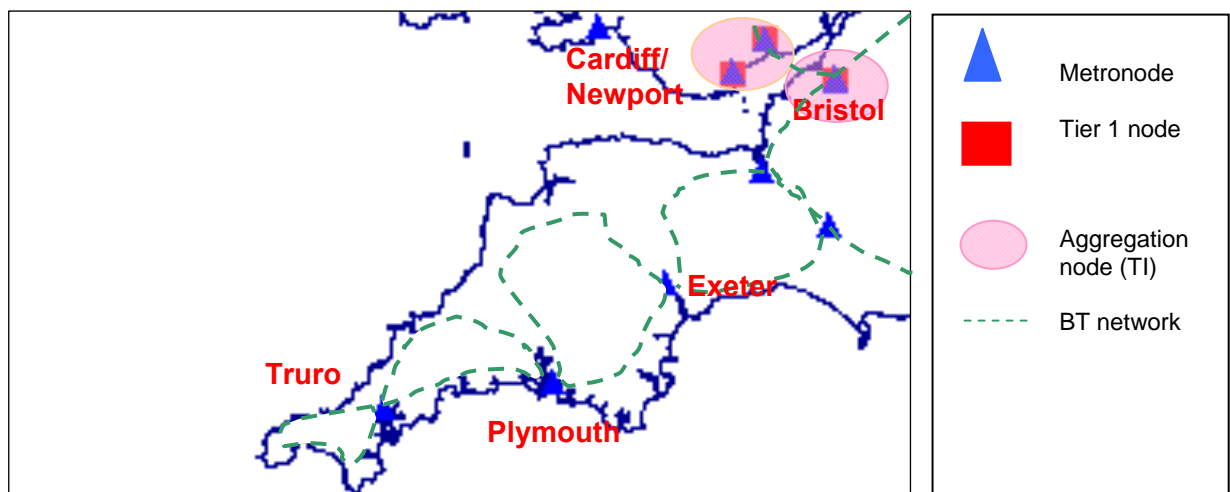
- A7.103 Our decision whether there should be additional aggregation points for the AISBO market is based on an assessment of aggregation opportunities. The identification of new nodes should reflect there being retail business connectivity traffic sufficient to justify additional interconnection.
- A7.104 However, in contrast to the Traditional interface market, we do not have detailed information to determine how many AI circuits would be sold in the "area" served by that metronode. We have data on the number of circuits sold in particular postal sectors, but we do not have data to map each postal sector to a particular metronode. In any case, the nature of BT's future network configuration may entail a postal sector potentially being served by more than one metronode. Therefore, there is not explicit definition of "catchment areas" for each metronode in the same way as seen for Traditional interface market.¹²⁶

¹²⁶ BT's PPC charging model calculates, for any wholesale circuit sold, the Tier 1 nodes that each end of the circuit would be parented to. Each postal sector in the UK is mapped onto a particular Tier 1 node and therefore, under BT's existing PPC charging model, there is a "catchment" area associated with each Tier 1 node consisting of all postal sectors mapped to the parent Tier 1 node. In the case of BT's AI services, this may entail it providing services using a ring-based network architecture. If there is more than one metronode associated with a particular ring, this would mean that a postal sector (on that network-ring) would potentially be served by more than one metronode.

A7.105 We have nevertheless conducted geographic analysis of the amount of traffic concentrated in particular localities by making some assumptions about possible postal sectors associated with a particular metronodes. However, only considering circuits sold in postcodes in the “immediate vicinity” of individual metronodes might not capture wider aggregation opportunities of interconnection at a particular metronode. Therefore, in assessing aggregation opportunities at a particular metronode, we have also considered the fact that a particular interconnection point might be used, for example, to serve traffic further downstream of that point.

A7.106 For example, in seeking to identify new aggregation points based on the density of businesses/traffic, there are specific areas (particularly the South West) where, sales of circuits in the immediate vicinity of a metronode are not necessarily that high. If we were to consider this information in isolation, then it would suggest that there are insufficient aggregation opportunities to interconnect a metronode in that area). On the other hand, if we consider the wider volumes of traffic served across all of the additional metronodes (deeper in the network), this may well justify a further aggregation point. We show this in respect of the South West of England in Figure A7.8 below.

Figure A7.8: Location of Metronodes and Tier 1 nodes in South West



Source: Ofcom, November 2008

A7.107 It may be the case that the Exeter metronode would not generate sufficient leased lines traffic based solely on the number of users in close vicinity. If there were also sufficient traffic originating from Truro and Plymouth, it could still be economic for an OCP to locate at the Exeter metronode (rather than backhauling all of this traffic to Bristol).

A7.108 The above discussion therefore suggests that we might identify addition aggregation nodes where this node could also be used to serve additional circuits downstream of that point. So for example, at the very least, it might be worthwhile to identify nodes in South East (i.e. Kent), the South West (i.e. Devon and Cornwall) and also in Belfast.

BT aggregation node proposals

A7.109 In its response to the January 2008 consultation, BT also put forward its own proposals for a number of new locations should be considered as qualifying as being aggregation nodes. In general, its rationale for the identification of these

additional nodes was the volume of aggregation at these locations means that a number of CPs in addition to BT are likely to interconnect or would be likely to in the timeframe envisaged by this review.

Table A7.6: Additional BT aggregation node proposals

Aggregation node	BT's rationale for inclusion
Basingstoke	The western corridor out of London has sufficiently high business density to support more aggregation nodes. There are multiple fibre networks in this area.
Bracknell	The western corridor out of London has sufficiently high business density to support more aggregation nodes. There are multiple fibre networks in this area.
Derby	A number of CPs already interconnect with BT for TDM at a major network node in Derby.
Exeter	The current proposal has no aggregation node in the South West. CPs requested a point of handover in Exeter as part of the 21CN consultation, and this is being provided.
Falkirk	BT has chosen to site a major network node in Falkirk. This is designed to serve Edinburgh and shows that the physical location of a node is not necessarily a good indication of the exact area it serves.
Kendal	All networks that extend into Scotland tend to have a western route via Kendal due to the physical geography of this area.
Maidstone	The current proposal has no aggregation node in Kent. CPs requested a point of handover in Maidstone, as part of the 21CN consultation, and this is being provided.
Darlington / Stockton / Middlesbrough	This area is sufficiently large to justify an aggregation node. This is on the eastern route of most trunk networks.
Peterborough	Peterborough is one of BT's major 21CN nodes. There are currently multiple trunk networks going through Peterborough.
Stoke-on-Trent	This is mid-way between Birmingham and Manchester. Most major trunk networks go via Stoke-on-Trent.

Source: BT, 27 March 2008

Assessment of aggregation opportunities

A7.110 Our discussion above suggested identification of three additional aggregation nodes based in the South-East and South-West of England and in Northern Ireland. BT also put forward some additional aggregation node proposals, which we have considered in more detail below.

A7.111 In assessing the above proposals, we have used available circuit data to estimate the potential AISBO demand that might be associated with the proposed nodes. Using geographic data on the number of low bandwidth AISBO circuit ends in

different postal sectors/areas, we estimated the (potential) aggregation opportunities at different aggregation nodes. This analysis is set out in Table A7.7 below. We show in column 2 the relevant geographic areas that we assumed would be likely to map to one of BT's metronodes and therefore the possible volumes of AISBO demand associated with the proposed metronodes (we have expressed this as shares of the total number of low bandwidth AISBO circuit ends).

Table A7.7: Estimates AISBO traffic associated with different BT aggregation node proposals

Potential aggregation node	Relevant geographic areas	Estimated share of low bandwidth AISBO traffic
Belfast	Northern Ireland	1.3%
Bracknell/Basingstoke	Reading	1.7%
Darlington/Stockton/Middlesborough	Darlington/Teeside	1.6%
Derby	Derby	0.8%
Exeter	Exeter/Plymouth/Torquay/Truro	1.0%
Falkirk	Dundee/Perth/Falkirk/Kircaldy	0.8%
Kendal	Lancaster	0.2%
Maidstone	Medway, Canterbury, Tunbridge Wells	1.6%
Peterborough	Peterborough/Lincoln	1.1%
Stoke	Stoke-on-Trent	1.2%

Source: Ofcom, November 2008

- A7.112 Table A7.7 shows the potential aggregation opportunities at different location. The above estimates of the shares of AISBO circuit ends sold in different locations suggests that for most of the additional nodes that BT proposed there are reasonably significant volume shares. To put the above shares into context, for other large aggregation node locations such as Birmingham and Cardiff each have 2% share of AISBO traffic and Edinburgh around a 1.5% share. There are also a number of other urban centres we have identified as aggregation nodes of comparable size in terms of the share of low bandwidth AISBO markets (e.g. Aberdeen, Portsmouth, Bristol).
- A7.113 The main question mark (in terms of circuit volumes) relates to BT's proposals for aggregation nodes in Kendal (which we have estimated have a share of only 0.2%). In the case of Kendal, this is distant to most other nodes as it is 64km to the nearest aggregation node (in Carlisle). The traffic volumes we have estimate for the Kendal node, do not suggest that there are significant aggregation opportunities (based on traffic in the immediate vicinity of the Kendal node). This might suggest that we should reject this as an additional aggregation node.
- A7.114 However, even if the volumes of traffic are potentially smaller than for other aggregation nodes, as BT suggests, interconnection might still be justified at this point as it is already en-route to other nodes. As such an additional interconnect point would not necessarily require significant additional investment (for example a CP would already have trunk capacity running past this point). A CP would simply need sufficient traffic to make it worth investing in interconnection equipment and accommodation at this location. An additional aggregation node could be justified in the Kendal area without the need for significant traffic concentrations. This would be different to a scenario where additional core network (including trunk digging and ducting) to serve locations that are not en-route to other nodes (for example in a more remote region (in network terms) such as Inverness).

A7.115 We looked at specific information from a major CP, which suggests that they have a major aggregation point to serve the Cumbria area. Although the CP has not located this node in Kendal, this evidence suggests that there could be sufficient traffic to justify an interconnection point in the area as a whole (rather than backhauling this traffic either to Preston or Carlisle). Wider evidence on the location of CP POPs also showed that at least two had location in close proximity to the Kendal area.

A7.116 On this basis, we have accepted BT's proposal for an aggregation node in Kendal.

London aggregation nodes

A7.117 As with the Traditional Interface market, we have looked in more detail at the London area. Analysis of the London aggregation nodes suggests that the most metronode locations map closely to our proposed list of aggregation nodes.

Table A7.8: Proximity of London metronodes to proposed TI aggregation nodes

Ofcom TI Aggregation nodes	Metro nodes	Distances (km)
CROYDON	CROYDON	0.3
KINGSTON	KINGSTON	0.0
LONDON CENTRAL	COVENT GARDEN	0.0
	FARADAY TE (Moorgate)	0.1
	SOUTHBANK	0.1
	BT TOWER WESTBLOCK	0.1
	SOUTH KENSINGTON	3.6
	BERMONDSEY	3.0
LONDON DOCKLANDS	STEPNEY GREEN	1.6
LONDON EAST	KIDBROOKE	2.2
	UPTON PARK	3.4
	WOODFORD	6.4
LONDON NORTH	POTTERS BAR	0.0
LONDON WEST	COLINDALE	0.0
	EALING	0.9
	SOUTHALL	4.0
WATFORD	WATFORD	0.0

Source: Ofcom, November 2008

A7.118 As shown in Table 7.8 above there are clearly a number of nodes that coincide very closely or at identical locations to BT's Tier 1 nodes. For some of the nodes such as Woodford, Southall and South Kensington (which are new locations) these are in sufficient proximity, respectively to the London West and London Central TI aggregation nodes. As such, we have included these new locations as part of the London West and London Central aggregation nodes.

A7.119 On this basis, we consider that similar aggregation nodes are appropriate for the London area in respect of AISBO markets, namely Central, Docklands, North, East and West nodes.

Conclusions for AI aggregation nodes

A7.120 In light of the above evidence, we therefore propose to accept BT's list of aggregation nodes, which when combined with the existing aggregation nodes results in the following for the AISBO market. We have also identified an additional node in Belfast, reflecting the fact that BT has three metronode locations in the

Northern Ireland area (including two in Belfast). The final list of the aggregation nodes for the AISBO market is set out in Table A7.9 below.

Table A7.9: AISBO aggregation nodes

ABERDEEN	DERBY	LEICESTER	PETERBOROUGH
BASINGSTOKE	DONCASTER	LIVERPOOL	PRESTON
BELFAST	EXETER	LONDON*	READING (BRACKNELL METRONODE)
BISHOPS STORTFORD	EDINBURGH	LUTON	SALISBURY
BIRMINGHAM	FALKIRK	MAIDSTONE	SHEFFIELD
BRIGHTON	CLYDE VALLEY / GLASGOW	DARLINGTON / STOCKTON / MIDDLESBROUGH	SLOUGH
BRISTOL	GLOUCESTER	MANCHESTER	SOUTHAMPTON/COSHAM
CAMBRIDGE	GUILDFORD	MILTON KEYNES	STOKE
CARLISLE	IPSWICH	NEWCASTLE	SWINDON
CHELMSFORD	IRVINE	NEWPORT/CARDIFF	WARRINGTON
COVENTRY	KINGSTON	NORTHAMPTON	WATFORD
CRAWLEY	KENDAL	NOTTINGHAM	WOLVERHAMPTON
CROYDON	LEEDS	OXFORD	YORK (MALTON METRONODE)

LONDON AREA: DOCKLANDS, CENTRAL, NORTH, EAST, WEST

Source: Ofcom, November 2008

Annex 8

SMP Conditions and Directions

Revocation of notifications, identification of certain markets, the making of market power determinations, the setting of SMP service conditions, and the setting of Directions under SMP service conditions

NOTIFICATION UNDER SECTION 48 (1) OF THE COMMUNICATIONS ACT 2003

Decision with regards to the identification of markets, the making of market power determinations and the setting of SMP service conditions in relation to BT and KCOM under section 45 of the Communications Act 2003

WHEREAS:

- (A)** The Office of Communications ('OFCOM') made, in accordance with sections 48 (2), 79 and 80 of the Communications Act 2003 ('the Act') proposals for identifying certain markets, making market power determinations and the setting of SMP services conditions by reference to such determinations ('SMP Conditions') in relation to British Telecommunications plc ('BT') and KCOM Group plc ('KCOM') by way of publication of notifications on 17 January 2008 and 10 July 2008 ('the Consultation Notifications')
- (B)** Copies of the Consultation Notifications were sent to the Secretary of State in accordance with section 50 (1) (a) of the Act and to the European Commission and to the regulatory authorities of every other Member State in accordance with sections 50 (3) and 81 of the Act;
- (C)** In the Consultation Notifications and the accompanying explanatory statements OFCOM invited representations about any of the proposals set out therein by 27 March 2008 and 12 August 2008 respectively;
- (D)** By virtue of section 80 (6) of the Act, OFCOM may give effect to any proposals to identify a market for the purpose of making a market power determination or any proposals for making a market power determination set out in the Consultation Notifications, with or without modification, where:
 - (i) it has considered every representation about the proposals duly made to OFCOM within the time period specified in the Consultation Notifications;
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State; but
 - (iii) OFCOM's power to give effect to such proposals is subject to sections 82 and 83 of the Act;

- (E) by virtue of section 48 (5) of the Act, Ofcom may give effect to any proposals to set SMP Conditions set out in the Consultation Notifications, with or without modification, where:
- (i) it has considered every representation about the proposals duly made to OFCOM, within the time period specified in the Consultation Notification; and
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State;
- (F) OFCOM received responses to the Consultation Notifications and has considered every such representation duly made to it in respect of the proposals set out in the Consultation Notifications and the accompanying explanatory statement; and the Secretary of State has not notified OFCOM of any international obligation of the United Kingdom for this purpose;
- (G) The European Commission has not made a notification for the purposes of Article 7 (4) of the Framework Directive as referred to in section 82 of the Act and the proposals do not relate to a transnational market as referred to in section 83 of the Act;

NOW, therefore:

1. OFCOM, in accordance with sections 48 (1) and 80 of the Communications Act 2003 ('the Act') hereby identifies certain markets, makes market power determinations and sets SMP services conditions by reference to such determinations ('SMP Conditions').
2. OFCOM identifies in accordance with section 79 of the Act the following markets for the purpose of making market power determinations:-
 - (a) the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second within the United Kingdom but not including the Hull Area;
 - (b) the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second within the United Kingdom but not including the Hull Area and the Central and East London Area;
 - (c) the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second within the United Kingdom but not including the Hull Area and the Central and East London Area;
 - (d) the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the United Kingdom but not including the Hull Area;
 - (e) the provision of wholesale trunk segments at all bandwidths within the United Kingdom;

- (f) the provision of traditional interface retail leased lines up to and including a bandwidth capacity of eight megabits per second within the United Kingdom but not including the Hull Area;
 - (g) the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second within the Hull Area;
 - (h) the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second within the Hull Area;
 - (i) the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second within the Hull Area;
 - (j) the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the Hull Area; and
 - (k) the provision of alternative interface symmetric broadband origination with a bandwidth capacity above one gigabit per second within the Hull Area.
3. OFCOM in accordance with section 79 of the Act makes the following market power determinations in relation to the markets referred to in paragraph 2 above:-
- (a) in relation to the markets set out in paragraph 2 (a)-(f) above, BT; and
 - (b) in relation to the markets set out in paragraph 2 (g)-(j) above, KCOM.
4. Ofcom in accordance with sections 45, 48, 87 and 88 of the Act sets SMP conditions on the persons referred to in paragraphs 3 (a) and (b) above as set out in Schedules 1 to 10, respectively, to this Notification.
5. Ofcom further sets Directions under certain SMP conditions referred to in paragraph 4 above on the person referred to in paragraph 3 (a) above as set out in Schedules 11 to 15 to this Notification.
6. Ofcom determines that the SMP conditions referred to in paragraph 4 and the Directions referred to in paragraph 5 will become effective, unless otherwise stated, with publication of this final statement on 8 December 2008.
7. OFCOM hereby amends Part 1 of Schedule 1 to the Notification dated 22 July 2004 setting further SMP services conditions on BT in relation to regulatory accounting in respect of various markets by:
- (a) removing the reference at paragraph 15 to *“Provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second up to and including one hundred and fifty five megabits per second within the UK but not including the Hull Area”* to be replaced with *“Provision of traditional interface symmetric broadband origination with a bandwidth capacity*

above eight megabits per second and up to and including forty five megabits per second within the United Kingdom but not including the Hull Area and the Central and East London Area (as defined in OFCOM's Notification published on 8 December 2008)"; and

- (b) removing the reference at paragraph 16 to "*Provision of alternative interface symmetric broadband origination at all bandwidths within the UK but not including the Hull Area*" to be replaced with "*Provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the United Kingdom but not including the Hull Area*"; and
 - (c) Adding a new paragraph 17a with a reference to "*Provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second within the United Kingdom but not including the Hull Area and the Central and East London Area (as defined in OFCOM's Notification published on 8 December 2008)*".
8. OFCOM hereby further amends Part 1 of Schedule 1 to the Notification dated 22 July 2004 setting further SMP services conditions on BT in relation to regulatory accounting in respect of various markets by updating those dates in the second column set out for paragraphs 14 – 17 and 25 and replacing the current dates with the 8 December 2008 and by setting the date for new paragraph 17a as the 8 December 2008.
9. OFCOM hereby also amends Part 1 of Schedule 1 to the Notification dated 22 July 2004 setting further SMP services conditions on KCOM in relation to regulatory accounting in various markets by:
- (a) removing the reference at paragraph 10 to "*Provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second up to and including one hundred and fifty five megabits per second within the Hull Area*" to be replaced with "*Provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second within the Hull Area*";
 - (b) removing the reference at paragraph 11 to "*Provision of alternative interface symmetric broadband origination at all bandwidths within the Hull Area*" to be replaced with "*Provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second within the Hull Area*"; and
 - (c) adding a new paragraph 12 with a reference to "*Provision of alternative interface symmetric broadband origination with a bandwidth capacity of up to and including one gigabit per second within the Hull Area*".
10. Ofcom hereby further amends Part 1 of Schedule 1 to the Notification to KCOM dated 22 July 2004 setting further SMP services conditions on KCOM in relation to regulatory accounting in respect of various markets by updating those dates in the second column set out for paragraphs 9 and 10 and replacing the current dates with the 8 December 2008 and by setting the date for new paragraph 12 as 8 December 2008.

11. Ofcom hereby further amends Part 2 of Schedule 1 to the Notification dated 22 July 2004 setting further SMP services conditions on KCOM in relation to regulatory accounting in various markets by removing the entire table in Part 2 and replacing it with the word “None”.
12. The Notification and SMP Conditions set out in Annex D of the “*Review of retail leased lines, symmetric broadband origination and wholesale trunk segments markets*”, published by OFCOM on 24 June 2003, and any subsequent modifications to the SMP conditions set by those Notifications or any Directions under these SMP Conditions shall be revoked by this Notification when it takes effect under sections 48 (1) and 79 (4) of the Act.
13. The effect of, and Ofcom's reasons for, identifying the markets set out in paragraph 2 above are contained in sections 3 – 6 of the explanatory statement accompanying this Notification.
14. The effect of, and Ofcom's reasons for, making the market power determinations set out in paragraph 3 above are contained in section 7 of the explanatory statement accompanying this Notification.
15. The effect of, and Ofcom's reasons for, setting the SMP Conditions set out in Schedules 1 to 10 to this Notification and the effect of, and Ofcom's reasons for, setting the Directions under these SMP Conditions as set out in Schedules 11 to 15 are contained in section 8 of the explanatory statement accompanying this Notification.
16. In identifying and analysing the markets referred to in paragraph 2 above, and in considering whether to make the decisions set out in this Notification, Ofcom has taken due account of all applicable guidelines and recommendations which have been issued or made by the European Commission in pursuance of a Community instrument, and relate to market identification and analysis, as required by section 79 of the Act.
17. In considering whether to make the decisions set out in this Notification, Ofcom has considered all representations duly made to it in respect of its proposals set out in the Consultation Notifications and has taken the utmost account of comments made by the European Commission, as required by Article 7 (5) of Directive 2002/21/EC.
18. In making all of the decisions set out in this Notification Ofcom has considered and acted in accordance with the six Community requirements in section 4 of the Act.
19. Copies of this Notification and the accompanying explanatory statement have been sent to the Secretary of State in accordance with sections 50(1)(a) and 81(1), the European Commission and to the regulatory authorities of every other Member State in accordance with sections 50(2), 50 (6) and 81(3) of the Act.
20. Save for the purposes of paragraph 2 of this Notification and except as otherwise defined in this Notification, words or expressions used shall have the same meaning as in the Act.
21. In this Notification:

- a. **“BT”** means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985, as amended by the Companies Act 1989;
- b. **“Hull area”** means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;
- c. **“KCOM”** means KCOM Group plc, whose registered company number is 2150618, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985, as amended by the Companies Act 1989;
- d. **“Central and East London Area”** means the area in London consisting of the postal sectors set out in the Appendix to this Notification; and
- e. **“United Kingdom”** has the meaning given to it in the Interpretation Act 1978 (1978 c 30).



Gareth Davies
Competition Policy Director, Ofcom

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

8 December 2008

Appendix

List of postal sectors constituting the “Central and East London Area”

E1 0, E1 1, E1 2, E1 5, E1 6, E1 7, E1 8, E14 0, E14 1, E14 2, E14 3, E14 4, E14 5, E14 6, E14 7, E14 8, E14 9, E1W 1, E1W 2, E2 7, E77 1, E98 1, EC1A 1, EC1A 2, EC1A 4, EC1A 7, EC1A 9, EC1M 3, EC1M 4, EC1M 5, EC1M 6, EC1M 7, EC1N 2, EC1N 6, EC1N 7, EC1N 8, EC1R 0, EC1R 1, EC1R 3, EC1R 4, EC1R 5, EC1V 0, EC1V 1, EC1V 2, EC1V 3, EC1V 4, EC1V 7, EC1V 8, EC1V 9, EC1Y 0, EC1Y 1, EC1Y 2, EC1Y 4, EC1Y 8, EC2A 1, EC2A 2, EC2A 3, EC2A 4, EC2M 1, EC2M 2, EC2M 3, EC2M 4, EC2M 5, EC2M 6, EC2M 7, EC2N 1, EC2N 2, EC2N 3, EC2N 4, EC2P 2, EC2R 5, EC2R 6, EC2R 7, EC2R 8, EC2V 5, EC2V 6, EC2V 7, EC2V 8, EC2Y 5, EC2Y 8, EC2Y 9, EC3A 1, EC3A 2, EC3A 3, EC3A 4, EC3A 5, EC3A 6, EC3A 7, EC3A 8, EC3M 1, EC3M 2, EC3M 3, EC3M 4, EC3M 5, EC3M 6, EC3M 7, EC3M 8, EC3N 1, EC3N 2, EC3N 3, EC3N 4, EC3P 3, EC3R 5, EC3R 6, EC3R 7, EC3R 8, EC3V 0, EC3V 1, EC3V 3, EC3V 4, EC3V 9, EC4A 1, EC4A 2, EC4A 3, EC4A 4, EC4M 5, EC4M 6, EC4M 7, EC4M 8, EC4M 9, EC4N 1, EC4N 4, EC4N 5, EC4N 6, EC4N 7, EC4N 8, EC4R 0, EC4R 1, EC4R 2, EC4R 3, EC4R 9, EC4V 2, EC4V 3, EC4V 4, EC4V 5, EC4V 6, EC4Y 0, EC4Y 1, EC4Y 7, EC4Y 8, EC4Y 9, N1 6, N1 7, N1 9, NW1 0, NW1 1, NW1 2, NW1 3, NW1 5, SE1 0, SE1 1, SE1 2, SE1 7, SE1 8, SE1 9, SE11 4, SE8 3, SE8 4, SW1A 0, SW1A 1, SW1A 2, SW1E 5, SW1E 6, SW1H 0, SW1H 9, SW1P 1, SW1P 2, SW1P 3, SW1P 4, SW1V 1, SW1V 2, SW1W 0, SW1W 9, SW1X 0, SW1X 7, SW1X 8, SW1X 9, SW1Y 4, SW1Y 5, SW1Y 6, SW3 1, SW3 2, SW3 3, SW7 1, SW7 4, SW7 5, W1A 1, W1A 2, W1A 3, W1A 9, W1B 1, W1B 2, W1B 3, W1B 4, W1B 5, W1C 1, W1C 2, W1D 1, W1D 2, W1D 3, W1D 4, W1D 5, W1D 6, W1D 7, W1F 0, W1F 7, W1F 8, W1F 9, W1G 0, W1G 6, W1G 7, W1G 8, W1G 9, W1H 1, W1H 2, W1H 4, W1H 5, W1H 6, W1H 7, W1J 0, W1J 5, W1J 6, W1J 7, W1J 8, W1J 9, W1K 1, W1K 2, W1K 3, W1K 4, W1K 5, W1K 6, W1K 7, W1S 1, W1S 2, W1S 3, W1S 4, W1T 1, W1T 2, W1T 3, W1T 4, W1T 5, W1T 6, W1T 7, W1U 1, W1U 2, W1U 3, W1U 4, W1U 5, W1U 6, W1U 7, W1U 8, W1W 5, W1W 6, W1W 7, W1W 8, W2 1, W2 2, W2 3, W2 6, W8 5, W8 9, WC1A 1, WC1A 2, WC1B 3, WC1B 4, WC1B 5, WC1E 6, WC1E 7, WC1H 0, WC1H 8, WC1H 9, WC1N 1, WC1N 2, WC1N 3, WC1R 4, WC1R 5, WC1V 6, WC1V 7, WC1X 0, WC1X 8, WC1X 9, WC2A 1, WC2A 2, WC2A 3, WC2B 4, WC2B 5, WC2B 6, WC2E 7, WC2E 8, WC2E 9, WC2H 0, WC2H 7, WC2H 8, WC2H 9, WC2N 4, WC2N 5, WC2N 6, WC2R 0, WC2R 1, WC2R 2, WC2R 3.

THE SMP CONDITIONS

Schedule 1

The conditions imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second in which British Telecommunications plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second within the United Kingdom but not including the Hull Area and shall also apply to the provision of Interconnection and Accommodation Services.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“**Act**” means the Communications Act 2003;

“**Access Charge Change Notice**” has the meaning given to it in Condition G6;

“**Accommodation Services**” mean the provision of space on reasonable terms permitting a Third Party to occupy part of an MDF Site reasonably sufficient to permit the use of one or more disaggregated access and backhaul leased lines products, and in particular to permit the connection of the Dominant Provider’s Electronic Communications Network with that of a Third Party at that location and having the following characteristics:

- (a) the Third Party’s Electronic Communications Network is situated in an area of the MDF Site which:
 - (i) is a single undivided space;
 - (ii) after proper performance by the Dominant Provider of its obligation to provide Network Access pursuant to Condition G1, would permit the normal operation of the Third Party’s Electronic Communications Network (or would permit if the Dominant Provider removed any object or substance whether toxic or not, which might reasonably prevent or hinder the occupation of the MDF Site for such use); and
 - (iii) if so requested by the Third Party, is not unreasonably distant from the Dominant Provider’s Electronic Communications Network within the MDF Site;
- (b) no permanent physical partition is erected in the space between the Third Party’s Electronic Communications Network and the Dominant Provider’s Electronic Communications Network; and
- (c) the Third Party’s Electronic Communications Network is neither owned nor run by the Dominant Provider or by any person acting on the Dominant Provider’s behalf;

“Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Interconnection Services” mean:

- In-Span Handover (“ISH”);
- Customer-Sited Handover (“CSH”); and
- ISH extension circuits.

“MDF Site” means the site of an operational building of the Dominant Provider that houses a main distribution frame;

“Network Component” means to the extent they are used in the Market, or for Interconnection Services, the network components specified in a direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

“Usage Factor” means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition G1 – Requirement to provide network access on reasonable request

G1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

G1.2 The provision of Network Access in accordance with paragraph G1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms and conditions (excluding charges) and on such terms and conditions (excluding charges) as Ofcom may from time to time direct.

G1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition G2 – Requirement not to unduly discriminate

G2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

G2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition G3 – Basis of charges

G3.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition G1 is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

G3.2 For the avoidance of any doubt, where the charge offered, payable or proposed for Network Access covered by Condition G1 is for a service which is subject to a charge control, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that such a charge satisfies the requirement of Condition G3.1.

G3.3 The Dominant Provider shall comply with any direction Ofcom may from time to time direct under this Condition.

[Condition G4 – Charge Controls: A potential Charge Control SMP Condition is subject of a separate Consultation published 8 December 2008]

Condition G5 – Requirement to publish a reference offer

G5.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

G5.2 Subject to paragraph G5.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;
- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
 - (iv) a definition and limitation of liability and indemnity; and
 - (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);

- (n) the standard terms and conditions for the provision of Network Access;
- (o) the amount applied to:
 - (i) each Network Component used in providing Network Access with the relevant Usage Factors;
 - (ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

G5.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs G5.2(a)-(o).

G5.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

G5.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

G5.6 Publication referred to above shall be effected by:

- (a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and
- (b) sending a copy of the Reference Offer to Ofcom.

G5.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

G5.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

G5.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

G5.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition G6 – Requirement to notify charges and terms and conditions

G6.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

G6.2 Save where otherwise provided in Condition G8, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition G1 a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges for new Network Access (an “Access Charge Change Notice”) not less than 90 days before any such amendment comes into effect for existing Network Access, or not less than 28 days before any such amendment comes into effect for new Network Access.

G6.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the terms and conditions associated with the provision of that Network Access;
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “effective date”);
- (d) the current and proposed new charge and the relevant Usage Factors applied to each Network Component comprised in that Network Access, reconciled in each case with the current or proposed new charge; and
- (e) the information specified in sub paragraph (d) above with respect to that Network Access to which that paragraph applies.

G6.4 The Dominant Provider shall not apply any new charge, term and condition identified in an Access Charge Change Notice before the effective date.

G6.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs G6.3(a)-(e).

Condition G7 – Quality of Service

G7.1 The Dominant provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider in such manner and form as Ofcom may from time to time direct.

G7.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition G8 – Requirement to notify technical information

G8.1 Save where Ofcom consents otherwise, where the Dominant Provider-

- (a) proposes to provide Network Access covered by Condition G1, the terms and conditions for which comprise new-
 - (i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);
 - (ii) locations of the points of Network Access; or
 - (iii) technical standards (including any usage restrictions and other security issues),
 or
- (b) proposes to amend an existing Access Contract covered by Condition G1 by modifying the terms and conditions listed in paragraph G8.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

G8.2 The Dominant Provider shall ensure that the Notice includes-

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

G8.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

G8.4 Publication referred to in paragraph G8.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and

- (c) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition G1. The provision of such a copy of the Notice may be subject to a reasonable charge.

G9 - Requests for new Network Access

G9.1 The Dominant Provider shall for the purposes of transparency publish reasonable guidelines, in relation to requests for new Network Access made to it. Such guidelines shall detail:

- (a) the form in which such a request should be made;
- (b) the information that the Dominant Provider requires in order to consider a request for new Network Access; and
- (c) the time scales in which such requests will be handled by the Dominant Provider in accordance with this Condition.

G9.2 Such guidelines shall be published within two months of the date that this Condition enters into force following a consultation with Ofcom and Third Parties. The Dominant Provider shall keep the guidelines under review and consult with relevant Third Parties and Ofcom before making any amendments to the guidelines.

G9.3 The Dominant Provider shall, upon a reasonable request from a Third Party considering making a request for new Network Access, provide that Third Party with information so as to enable that Third Party to make a request for new Network Access. Such information shall be provided within a reasonable period.

G9.4 On receipt of a written request for new Network Access the Dominant Provider shall ensure that the requirements of this Condition are met. A modification of a request for new Network Access which has previously been submitted to the Dominant Provider, and rejected by the Dominant Provider, shall be considered as a new request.

G9.5 Within five working days of receipt of a request under paragraph G9.4, the Dominant Provider shall acknowledge that request in writing.

G9.6 Within fifteen working days of receipt of a request under paragraph G9.4 the Dominant Provider shall respond in writing to the requesting Third Party in one of the following ways:

- (a) the Dominant Provider shall confirm that the request will be met and shall confirm that the following will be prepared:
 - (i) the timetable for the provision of the new Network Access;
 - (ii) an initial offer of terms and conditions for the provision of the new Network Access; and
 - (iii) the timetable for the agreement of technical issues.

- (b) the Dominant Provider shall confirm that a feasibility study is reasonably required in order to determine whether the request made is reasonable and the Dominant Provider shall set out its objective reasons for the need for such a study;
- (c) the Dominant Provider shall confirm that the request is not sufficiently well formulated and, where it does so, the Dominant Provider shall detail all of the defects in the request which has been made; or
- (d) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal.

G9.7 Where the Dominant Provider responds to a request under paragraph G9.4 in accordance with paragraph G9.6(a) it shall, within thirty five working days of receipt of a request under paragraph G9.4, respond further to the requesting Third Party in writing and:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues.

G9.8 Where the Dominant Provider responds to a request under paragraph G9.4 in accordance with paragraph G9.6(a) and determines, due to a genuine error of fact, that it reasonably needs to complete a feasibility study, it may, as soon as practicable and in any event, within thirty five working days of receipt of a request under paragraph G9.4, inform the requesting Third Party that a feasibility study is reasonably required and set out its objective reasons for such a study.

G9.9 Where G9.8 applies the Dominant Provider shall, within forty five working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required, respond further to the requesting Third party, in writing, in one of the following ways:

- (a) the Dominant Provider shall confirm that the request will be met and shall:
 - (i) confirm the timetable for the provision of the new Network Access;
 - (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
 - (iii) confirm the timetable for the agreement of technical issues; or
- (b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

G9.10 The time limit set out in paragraph G9.9 above shall be extended up to seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph G9.8, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within forty five working

days of the date that the requesting Third Party was informed of the need for a feasibility study pursuant to paragraph G9.8; or

- the Third Party and the Dominant Provider agree to extend the time limit up to seventy working days.

G9.11 The time limit set out in paragraph G9.9 above shall be extended beyond seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph G9.8, if:

- Ofcom agrees; or
- the Third Party and the Dominant Provider agree to extend the time limit beyond seventy working days.

G9.12 Where the Dominant Provider responds to a request under paragraph G9.4 in accordance with paragraph G9.6(b) the Dominant Provider shall, within sixty working days of receipt of a request under paragraph G9.4, respond further to the requesting Third Party, in writing, in one of the following ways:

- (a) the Dominant Provider shall confirm that the request will be met and shall:
 - (i) confirm the timetable for the provision of the new Network Access;
 - (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
 - (iii) confirm the timetable for the agreement of technical issues; or
- (b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

G9.13 The time limit set out in paragraph G9.12 above shall be extended up to eighty five working days of receipt of a request under paragraph G9.4, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within sixty working days of receipt of a request under paragraph G9.4; or
- the Third Party and the Dominant Provider agree to extend the time limit up to eighty five working days.

G9.14 The time limit set out in paragraph G9.12 above shall be extended beyond eighty five working days of receipt of a request under paragraph G9.4, if:

- Ofcom agrees; or
- the Third Party and the Dominant Provider agree to extend the time limit beyond eighty five working days.

G9.15 Within two months of the date that this Condition enters into force the Dominant Provider shall provide Ofcom with a description of the processes it has put in place to ensure

compliance with this Condition. It shall keep those processes under review to ensure that they remain adequate for that purpose.

G9.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Schedule 2

The conditions imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second in which British Telecommunications plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second, within the United Kingdom but not including the Hull Area and the Central and East London Area and shall also apply to Interconnection and Accommodation Services.

2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Access Charge Change Notice” has the meaning given to it in Condition GG6;

“Accommodation Services” mean the provision of space on reasonable terms permitting a Third Party to occupy part of an MDF Site reasonably sufficient to permit the use of one or more disaggregated access and backhaul leased lines products, and in particular to permit the connection of the Dominant Provider’s Electronic Communications Network with that of a Third Party at that location and having the following characteristics:

- (a) the Third Party’s Electronic Communications Network is situated in an area of the MDF Site which:
 - (i) is a single undivided space;
 - (ii) after proper performance by the Dominant Provider of its obligation to provide Network Access pursuant to Condition GG1, would permit the normal operation of the Third Party’s Electronic Communications Network (or would permit if the Dominant Provider removed any object or substance whether toxic or not, which might reasonably prevent or hinder the occupation of the MDF Site for such use); and
 - (iii) if so requested by the Third Party, is not unreasonably distant from the Dominant Provider’s Electronic Communications Network within the MDF Site;
- (b) no permanent physical partition is erected in the space between the Third Party’s Electronic Communications Network and the Dominant Provider’s Electronic Communications Network; and
- (c) the Third Party’s Electronic Communications Network is neither owned nor run by the Dominant Provider or by any person acting on the Dominant Provider’s behalf;

“Central and East London Area” means the area in London consisting of the postal sectors set out in the Appendix to this Notification;

“Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Interconnection Services” mean:

- In-Span Handover (“ISH”);
- Customer-Sited Handover (“CSH”); and
- ISH extension circuits.

“MDF Site” means the site of an operational building of the Dominant Provider that houses a main distribution frame;

“Network Component” means to the extent they are used in the Market, or for Interconnection Services, the network components specified in a direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

“Usage Factor” means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.

4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.

5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition GG1 – Requirement to provide network access on reasonable request

GG1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

GG1.2 The provision of Network Access in accordance with paragraph GG1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms and conditions (excluding charges) and on such terms and conditions (excluding charges) as Ofcom may from time to time direct.

GG1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GG2 – Requirement not to unduly discriminate

GG2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

GG2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition GG3 – Basis of charges

GG3.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition GG1 is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

GG3.2 For the avoidance of any doubt, where the charge offered, payable or proposed for Network Access covered by Condition GG1 is for a service which is subject to a charge control under Condition GG4, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that such a charge satisfies the requirement of Condition GG3.1.

GG3.3 The Dominant Provider shall comply with any direction Ofcom may from time to time direct under this Condition.

[Condition GG4 – Charge Controls: A potential Charge Control SMP Condition is subject of a separate Consultation published 8 December 2008]

Condition GG5 – Requirement to publish a reference offer

GG5.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

GG5.2 Subject to paragraph GG5.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

(a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);

(b) the locations of the points of Network Access;

(c) the technical standards for Network Access (including any usage restrictions and other security issues);

(d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);

(e) any ordering and provisioning procedures;

(f) relevant charges, terms of payment and billing procedures;

(g) details of interoperability tests;

(h) details of maintenance and quality as follows:

(i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);

(ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;

(iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;

(iv) a definition and limitation of liability and indemnity; and

(v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;

(i) details of any relevant intellectual property rights;

(j) a dispute resolution procedure to be used between the parties;

(k) details of duration and renegotiation of agreements;

(l) provisions regarding confidentiality of non-public parts of the agreements;

(m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);

(n) the standard terms and conditions for the provision of Network Access;

(o) the amount applied to:

(i) each Network Component used in providing Network Access with the relevant Usage Factors;

(ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

GG5.3 To the extent that the Dominant Provider provides to itself Network Access that:

(i) is the same, similar or equivalent to that provided to any other person; or

(ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs GG5.2(a)-(o).

GG5.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

GG5.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

GG5.6 Publication referred to above shall be effected by:

(a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and

(b) sending a copy of the Reference Offer to Ofcom.

GG5.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

GG5.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

GG5.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

GG5.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GG6 – Requirement to notify charges and terms and conditions

GG6.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

GG6.2 Save where otherwise provided in Condition GG8, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition GG1, a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges for new Network Access (an “Access Charge Change Notice”) not less than 90 days before any such amendment comes into effect for existing Network Access, or not less than 28 days before any such amendment comes into effect for new Network Access.

GG6.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the terms and conditions associated with the provision of that Network Access;
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “effective date”);
- (d) the current and proposed new charge and the relevant Usage Factors applied to each Network Component comprised in that Network Access, reconciled in each case with the current or proposed new charge; and
- (e) the information specified in sub paragraph (d) above with respect to that Network Access to which that paragraph applies.

GG6.4 The Dominant Provider shall not apply any new charge, term and condition identified in an Access Charge Change Notice before the effective date.

GG6.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs GG6.3 (a)-(e).

Condition GG7 – Quality of Service

GG7.1 The Dominant provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider in such manner and form as Ofcom may from time to time direct.

GG7.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GG8 – Requirement to notify technical information

GG8.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition GG1, the terms and conditions for which comprise new-

(i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(ii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),
or

(b) proposes to amend an existing Access Contract covered by Condition GG1 by modifying the terms and conditions listed in paragraph GG8.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

GG8.2 The Dominant Provider shall ensure that the Notice includes-

(a) a description of the Network Access in question;

(b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;

(c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

GG8.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

GG8.4 Publication referred to in paragraph GG8.1 shall be effected by:

(a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;

(b) sending a copy of the Notice to Ofcom; and

(c) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition GG1. The provision of such a copy of the Notice may be subject to a reasonable charge.

GG9 - Requests for new Network Access

GG9.1 The Dominant Provider shall for the purposes of transparency publish reasonable guidelines, in relation to requests for new Network Access made to it. Such guidelines shall detail:

- (a) the form in which such a request should be made;
- (b) the information that the Dominant Provider requires in order to consider a request for new Network Access; and
- (c) the time scales in which such requests will be handled by the Dominant Provider in accordance with this Condition.

GG9.2 Such guidelines shall be published within two months of the date that this Condition enters into force following a consultation with Ofcom and Third Parties. The Dominant Provider shall keep the guidelines under review and consult with relevant Third Parties and Ofcom before making any amendments to the guidelines.

GG9.3 The Dominant Provider shall, upon a reasonable request from a Third Party considering making a request for new Network Access, provide that Third Party with information so as to enable that Third Party to make a request for new Network Access. Such information shall be provided within a reasonable period.

GG9.4 On receipt of a written request for new Network Access the Dominant Provider shall ensure that the requirements of this Condition are met. A modification of a request for new Network Access which has previously been submitted to the Dominant Provider, and rejected by the Dominant Provider, shall be considered as a new request.

GG9.5 Within five working days of receipt of a request under paragraph GG9.4, the Dominant Provider shall acknowledge that request in writing.

GG9.6 Within fifteen working days of receipt of a request under paragraph GG9.4 the Dominant Provider shall respond in writing to the requesting Third Party in one of the following ways:

- (a) the Dominant Provider shall confirm that the request will be met and shall confirm that the following will be prepared:
 - (i) the timetable for the provision of the new Network Access;
 - (ii) an initial offer of terms and conditions for the provision of the new Network Access; and
 - (iii) the timetable for the agreement of technical issues.
- (b) the Dominant Provider shall confirm that a feasibility study is reasonably required in order to determine whether the request made is reasonable and the Dominant Provider shall set out its objective reasons for the need for such a study;
- (c) the Dominant Provider shall confirm that the request is not sufficiently well formulated and, where it does so, the Dominant Provider shall detail all of the defects in the request which has been made; or

(d) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal.

GG9.7 Where the Dominant Provider responds to a request under paragraph GG9.4 in accordance with paragraph GG9.6(a) it shall, within thirty five working days of receipt of a request under paragraph GG9.4, respond further to the requesting Third Party in writing and:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues.

GG9.8 Where the Dominant Provider responds to a request under paragraph GG9.4 in accordance with paragraph GG9.6(a) and determines, due to a genuine error of fact, that it reasonably needs to complete a feasibility study, it may, as soon as practicable and in any event, within thirty five working days of receipt of a request under paragraph GG9.4, inform the requesting Third Party that a feasibility study is reasonably required and set out its objective reasons for such a study.

GG9.9 Where GG9.8 applies the Dominant Provider shall, within forty five working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required, respond further to the requesting Third party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

GG9.10 The time limit set out in paragraph GG9.9 above shall be extended up to seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph GG9.8, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within forty five working days of the date that the requesting Third Party was informed of the need for a feasibility study pursuant to paragraph GG9.8; or
- the Third Party and the Dominant Provider agree to extend the time limit up to seventy working days.

GG9.11 The time limit set out in paragraph GG9.9 above shall be extended beyond seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph GG9.8, if:

- Ofcom agrees; or

- the Third Party and the Dominant Provider agree to extend the time limit beyond seventy working days.

GG9.12 Where the Dominant Provider responds to a request under paragraph GG9.4 in accordance with paragraph GG9.6(b) the Dominant Provider shall, within sixty working days of receipt of a request under paragraph GG9.4, respond further to the requesting Third Party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

GG9.13 The time limit set out in paragraph GG9.12 above shall be extended up to eighty five working days of receipt of a request under paragraph GG9.4, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within sixty working days of receipt of a request under paragraph GG9.4; or

- the Third Party and the Dominant Provider agree to extend the time limit up to eighty five working days.

GG9.14 The time limit set out in paragraph GG9.12 above shall be extended beyond eighty five working days of receipt of a request under paragraph GG9.4, if:

- Ofcom agrees; or

- the Third Party and the Dominant Provider agree to extend the time limit beyond eighty five working days.

GG9.15 Within two months of the date that this Condition enters into force the Dominant Provider shall provide Ofcom with a description of the processes it has put in place to ensure compliance with this Condition. It shall keep those processes under review to ensure that they remain adequate for that purpose.

GG9.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Schedule 3

The conditions imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second in which British Telecommunications plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second, within the United Kingdom but not including the Hull Area and the Central and East London Area and shall also apply to Interconnection and Accommodation Services.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Access Charge Change Notice” has the meaning given to it in Condition GH6;

“Accommodation Services” mean the provision of space on reasonable terms permitting a Third Party to occupy part of an MDF Site reasonably sufficient to permit the use of one or more disaggregated access and backhaul leased lines products, and in particular to permit the connection of the Dominant Provider’s Electronic Communications Network with that of a Third Party at that location and having the following characteristics:

- (a) the Third Party’s Electronic Communications Network is situated in an area of the MDF Site which:
 - (i) is a single undivided space;
 - (ii) after proper performance by the Dominant Provider of its obligation to provide Network Access pursuant to Condition GH1, would permit the normal operation of the Third Party’s Electronic Communications Network (or would permit if the Dominant Provider removed any object or substance whether toxic or not, which might reasonably prevent or hinder the occupation of the MDF Site for such use); and
 - (iii) if so requested by the Third Party, is not unreasonably distant from the Dominant Provider’s Electronic Communications Network within the MDF Site;
- (b) no permanent physical partition is erected in the space between the Third Party’s Electronic Communications Network and the Dominant Provider’s Electronic Communications Network; and
- (c) the Third Party’s Electronic Communications Network is neither owned nor run by the Dominant Provider or by any person acting on the Dominant Provider’s behalf;

“Central and East London Area” means the area in London consisting of the postal sectors set out in the Appendix to this Notification;

“Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Interconnection Services” mean:

- In-Span Handover (“ISH”);
- Customer-Sited Handover (“CSH”); and
- ISH extension circuits.

“MDF Site” means the site of an operational building of the Dominant Provider that houses a main distribution frame;

“Network Component” means to the extent they are used in the Market, or for Interconnection Services, the network components specified in a direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

“Usage Factor” means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition GH1 – Requirement to provide network access on reasonable request

GH1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

GH1.2 The provision of Network Access in accordance with paragraph GH1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms and conditions (excluding charges) and on such terms and conditions (excluding charges) as Ofcom may from time to time direct.

GH1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GH2 – Requirement not to unduly discriminate

GH2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

GH2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition GH3 – Basis of charges

GH3.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition GH1 is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

GH3.2 For the avoidance of any doubt, where the charge offered, payable or proposed for Network Access covered by Condition GH1 is for a service which is subject to a charge control under Condition GH4, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that such a charge satisfies the requirement of Condition GH3.1.

GH3.3 The Dominant Provider shall comply with any direction Ofcom may from time to time direct under this Condition.

[Condition GH4 – Charge Controls: A potential Charge Control SMP Condition is subject of a separate Consultation published 8 December 2008]

Condition GH5 – Requirement to publish a reference offer

GH5.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

GH5.2 Subject to paragraph GH5.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

(a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);

(b) the locations of the points of Network Access;

(c) the technical standards for Network Access (including any usage restrictions and other security issues);

(d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);

(e) any ordering and provisioning procedures;

(f) relevant charges, terms of payment and billing procedures;

(g) details of interoperability tests;

(h) details of maintenance and quality as follows:

(i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);

(ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;

(iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;

(iv) a definition and limitation of liability and indemnity; and

(v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;

(i) details of any relevant intellectual property rights;

(j) a dispute resolution procedure to be used between the parties;

(k) details of duration and renegotiation of agreements;

(l) provisions regarding confidentiality of non-public parts of the agreements;

(m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);

(n) the standard terms and conditions for the provision of Network Access;

(o) the amount applied to:

(i) each Network Component used in providing Network Access with the relevant Usage Factors;

(ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

GH5.3 To the extent that the Dominant Provider provides to itself Network Access that:

(i) is the same, similar or equivalent to that provided to any other person; or

(ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs GH5.2(a)-(o).

GH5.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

GH5.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

GH5.6 Publication referred to above shall be effected by:

(c) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and

(d) sending a copy of the Reference Offer to Ofcom.

GH5.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

GH5.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

GH5.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

GH5.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GH6 – Requirement to notify charges and terms and conditions

GH6.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

GH6.2 Save where otherwise provided in Condition GH8, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition GH1, a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges for new Network Access (an “Access Charge Change Notice”) not less than 90 days before any such amendment comes into effect for existing Network Access, or not less than 28 days before any such amendment comes into effect for new Network Access.

GH6.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the terms and conditions associated with the provision of that Network Access;
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “effective date”);
- (d) the current and proposed new charge and the relevant Usage Factors applied to each Network Component comprised in that Network Access, reconciled in each case with the current or proposed new charge; and
- (e) the information specified in sub paragraph (d) above with respect to that Network Access to which that paragraph applies.

GH6.4 The Dominant Provider shall not apply any new charge, term and condition identified in an Access Charge Change Notice before the effective date.

GH6.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs GH6.3 (a)-(e).

Condition GH7 – Quality of Service

GH7.1 The Dominant provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider in such manner and form as Ofcom may from time to time direct.

GH7.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GH8 – Requirement to notify technical information

GH8.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition GH1, the terms and conditions for which comprise new-

(i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(ii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),
or

(b) proposes to amend an existing Access Contract covered by Condition GH1 by modifying the terms and conditions listed in paragraph GH8.1 (a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

GH8.2 The Dominant Provider shall ensure that the Notice includes-

(a) a description of the Network Access in question;

(b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;

(c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

GH8.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

GH8.4 Publication referred to in paragraph GH8.1 shall be effected by:

(a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;

(b) sending a copy of the Notice to Ofcom; and

(c) sending a copy of the Notice to any person at that person’s written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person

with which the Dominant Provider has entered into an Access Contract covered by Condition GH1. The provision of such a copy of the Notice may be subject to a reasonable charge.

GH9 - Requests for new Network Access

GH9.1 The Dominant Provider shall for the purposes of transparency publish reasonable guidelines, in relation to requests for new Network Access made to it. Such guidelines shall detail:

- (a) the form in which such a request should be made;
- (b) the information that the Dominant Provider requires in order to consider a request for new Network Access; and
- (c) the time scales in which such requests will be handled by the Dominant Provider in accordance with this Condition.

GH9.2 Such guidelines shall be published within two months of the date that this Condition enters into force following a consultation with Ofcom and Third Parties. The Dominant Provider shall keep the guidelines under review and consult with relevant Third Parties and Ofcom before making any amendments to the guidelines.

GH9.3 The Dominant Provider shall, upon a reasonable request from a Third Party considering making a request for new Network Access, provide that Third Party with information so as to enable that Third Party to make a request for new Network Access. Such information shall be provided within a reasonable period.

GH9.4 On receipt of a written request for new Network Access the Dominant Provider shall ensure that the requirements of this Condition are met. A modification of a request for new Network Access which has previously been submitted to the Dominant Provider, and rejected by the Dominant Provider, shall be considered as a new request.

GH9.5 Within five working days of receipt of a request under paragraph GH9.4, the Dominant Provider shall acknowledge that request in writing.

GH9.6 Within fifteen working days of receipt of a request under paragraph GH9.4 the Dominant Provider shall respond in writing to the requesting Third Party in one of the following ways:

- (a) the Dominant Provider shall confirm that the request will be met and shall confirm that the following will be prepared:
 - (i) the timetable for the provision of the new Network Access;
 - (ii) an initial offer of terms and conditions for the provision of the new Network Access; and
 - (iii) the timetable for the agreement of technical issues.
- (b) the Dominant Provider shall confirm that a feasibility study is reasonably required in order to determine whether the request made is reasonable and the Dominant Provider shall set out its objective reasons for the need for such a study;
- (c) the Dominant Provider shall confirm that the request is not sufficiently well formulated and, where it does so, the Dominant Provider shall detail all of the defects in the request which has been made; or

(d) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal.

GH9.7 Where the Dominant Provider responds to a request under paragraph GH9.4 in accordance with paragraph GH9.6(a) it shall, within thirty five working days of receipt of a request under paragraph GH9.4, respond further to the requesting Third Party in writing and:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues.

GH9.8 Where the Dominant Provider responds to a request under paragraph GH9.4 in accordance with paragraph GH9.6(a) and determines, due to a genuine error of fact, that it reasonably needs to complete a feasibility study, it may, as soon as practicable and in any event, within thirty five working days of receipt of a request under paragraph GH9.4, inform the requesting Third Party that a feasibility study is reasonably required and set out its objective reasons for such a study.

GH9.9 Where GH9.8 applies the Dominant Provider shall, within forty five working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required, respond further to the requesting Third party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

GH9.10 The time limit set out in paragraph GH9.9 above shall be extended up to seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph GH9.8, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within forty five working days of the date that the requesting Third Party was informed of the need for a feasibility study pursuant to paragraph GH9.8; or

- the Third Party and the Dominant Provider agree to extend the time limit up to seventy working days.

GH9.11 The time limit set out in paragraph GH9.9 above shall be extended beyond seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph GH9.8, if:

- Ofcom agrees; or

- the Third Party and the Dominant Provider agree to extend the time limit beyond seventy working days.

GH9.12 Where the Dominant Provider responds to a request under paragraph GH9.4 in accordance with paragraph GH9.6(b) the Dominant Provider shall, within sixty working days of receipt of a request under paragraph GH9.4, respond further to the requesting Third Party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

GH9.13 The time limit set out in paragraph GH9.12 above shall be extended up to eighty five working days of receipt of a request under paragraph GH9.4, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within sixty working days of receipt of a request under paragraph GH9.4; or

- the Third Party and the Dominant Provider agree to extend the time limit up to eighty five working days.

GH9.14 The time limit set out in paragraph GH9.12 above shall be extended beyond eighty five working days of receipt of a request under paragraph GH9.4, if:

- Ofcom agrees; or

- the Third Party and the Dominant Provider agree to extend the time limit beyond eighty five working days.

GH9.15 Within two months of the date that this Condition enters into force the Dominant Provider shall provide Ofcom with a description of the processes it has put in place to ensure compliance with this Condition. It shall keep those processes under review to ensure that they remain adequate for that purpose.

GH9.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Schedule 4

The conditions imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second in which British Telecommunications plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the United Kingdom but not including the Hull Area and shall also apply to Interconnection and Accommodation Services.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Access Charge Change Notice” has the meaning given to it in Condition HH6;

“Accommodation Services” mean the provision of space on reasonable terms permitting a Third Party to occupy part of an MDF Site reasonably sufficient to permit the use of one or more disaggregated access and backhaul leased lines products, and in particular to permit the connection of the Dominant Provider's Electronic Communications Network with that of a Third Party at that location and having the following characteristics:

- (a) the Third Party's Electronic Communications Network is situated in an area of the MDF Site which:
 - (i) is a single undivided space;
 - (ii) after proper performance by the Dominant Provider of its obligation to provide Network Access pursuant to Condition HH1, would permit the normal operation of the Third Party's Electronic Communications Network (or would permit if the Dominant Provider removed any object or substance whether toxic or not, which might reasonably prevent or hinder the occupation of the MDF Site for such use); and
 - (iii) if so requested by the Third Party, is not unreasonably distant from the Dominant Provider's Electronic Communications Network within the MDF Site;
- (b) no permanent physical partition is erected in the space between the Third Party's Electronic Communications Network and the Dominant Provider's Electronic Communications Network; and
- (c) the Third Party's Electronic Communications Network is neither owned nor run by the Dominant Provider or by any person acting on the Dominant Provider's behalf;

“Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000 and any British Telecommunications plc subsidiary or

holding company, or any subsidiary of that holding company, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Interconnection Services” mean:

- Customer-Sited Handover (“CSH”); and
- In-Building Handover (“IBH”).

“MDF Site” means the site of an operational building of the Dominant Provider that houses a main distribution frame;

“Network Component” means to the extent they are used in the Market, or for Interconnection Services, the network components specified in a direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition HH1 – Requirement to provide network access on reasonable request

HH1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

HH1.2 The provision of Network Access in accordance with paragraph HH1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms and conditions (excluding charges) and on such terms and conditions (excluding charges) as Ofcom may from time to time direct.

HH1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition HH2 – Requirement not to unduly discriminate

HH2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

HH2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition HH3 – Basis of charges

HH3.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition HH1 is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

HH3.2 For the avoidance of any doubt, where the charge offered, payable or proposed for Network Access covered by Condition HH1 is for a service which is subject to a charge control under Condition HH4, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that such a charge satisfies the requirement of Condition HH3.1.

HH3.2 The Dominant Provider shall comply with any direction Ofcom may from time to time direct under this Condition.

[Condition HH4 – Charge Controls: A potential Charge Control SMP Condition is subject of a separate Consultation published 8 December 2008]

Condition HH5 – Requirement to publish a reference offer

HH5.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

HH5.2 Subject to paragraph HH5.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

(a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);

(b) the locations of the points of Network Access;

(c) the technical standards for Network Access (including any usage restrictions and other security issues);

(d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);

(e) any ordering and provisioning procedures;

(f) relevant charges, terms of payment and billing procedures;

(g) details of interoperability tests;

(h) details of maintenance and quality as follows:

(i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);

(ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;

(iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;

(iv) a definition and limitation of liability and indemnity; and

(v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;

(i) details of any relevant intellectual property rights;

(j) a dispute resolution procedure to be used between the parties;

(k) details of duration and renegotiation of agreements;

(l) provisions regarding confidentiality of non-public parts of the agreements;

(m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);

(n) the standard terms and conditions for the provision of Network Access;

(o) the amount applied to:

(i) each Network Component used in providing Network Access with the relevant Usage Factors;

(ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

HH5.3 To the extent that the Dominant Provider provides to itself Network Access that:

(i) is the same, similar or equivalent to that provided to any other person; or

(ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs HH5.2(a)-(o).

HH5.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

HH5.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

HH5.6 Publication referred to above shall be effected by:

(e) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and

(f) sending a copy of the Reference Offer to Ofcom.

HH5.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

HH5.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

HH5.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

HH5.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition HH6 – Requirement to notify charges and terms and conditions

HH6.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

HH6.2 Save where otherwise provided in Condition HH8, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition HH1, a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges for new Network Access (an “Access Charge Change Notice”) not less than 90 days before any such amendment comes into effect for existing Network Access, or not less than 28 days before any such amendment comes into effect for new Network Access.

HH6.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the terms and conditions associated with the provision of that Network Access;
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “effective date”);
- (d) the current and proposed new charge and the relevant Usage Factors applied to each Network Component comprised in that Network Access, reconciled in each case with the current or proposed new charge; and
- (e) the information specified in sub paragraph (d) above with respect to that Network Access to which that paragraph applies.

HH6.4 The Dominant Provider shall not apply any new charge, term and condition identified in an Access Charge Change Notice before the effective date.

HH6.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs HH6.3(a)-(e).

Condition HH7 – Quality of Service

HH7.1 The Dominant provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider in such manner and form as Ofcom may from time to time direct.

HH7.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition HH8 – Requirement to notify technical information

HH8.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition HH1, the terms and conditions for which comprise new-

(i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(ii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),
or

(b) proposes to amend an existing Access Contract covered by Condition HH1 by modifying the terms and conditions listed in paragraph HH8.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

HH8.2 The Dominant Provider shall ensure that the Notice includes-

(a) a description of the Network Access in question;

(b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;

(c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

HH8.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

HH8.4 Publication referred to in paragraph HH8.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and
- (c) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition HH1. The provision of such a copy of the Notice may be subject to a reasonable charge.

HH9 - Requests for new Network Access

HH9.1 The Dominant Provider shall for the purposes of transparency publish reasonable guidelines, in relation to requests for new Network Access made to it. Such guidelines shall detail:

- (a) the form in which such a request should be made;
- (b) the information that the Dominant Provider requires in order to consider a request for new Network Access; and
- (c) the time scales in which such requests will be handled by the Dominant Provider in accordance with this Condition.

HH9.2 Such guidelines shall be published within two months of the date that this Condition enters into force following a consultation with Ofcom and Third Parties. The Dominant Provider shall keep the guidelines under review and consult with relevant Third Parties and Ofcom before making any amendments to the guidelines.

HH9.3 The Dominant Provider shall, upon a reasonable request from a Third Party considering making a request for new Network Access, provide that Third Party with information so as to enable that Third Party to make a request for new Network Access. Such information shall be provided within a reasonable period.

HH9.4 On receipt of a written request for new Network Access the Dominant Provider shall ensure that the requirements of this Condition are met. A modification of a request for new Network Access which has previously been submitted to the Dominant Provider, and rejected by the Dominant Provider, shall be considered as a new request.

HH9.5 Within five working days of receipt of a request under paragraph HH9.4, the Dominant Provider shall acknowledge that request in writing.

HH9.6 Within fifteen working days of receipt of a request under paragraph HH9.4 the Dominant Provider shall respond in writing to the requesting Third Party in one of the following ways:

- (a) the Dominant Provider shall confirm that the request will be met and shall confirm that the following will be prepared:
 - (i) the timetable for the provision of the new Network Access;
 - (ii) an initial offer of terms and conditions for the provision of the new Network Access; and
 - (iii) the timetable for the agreement of technical issues.

(b) the Dominant Provider shall confirm that a feasibility study is reasonably required in order to determine whether the request made is reasonable and the Dominant Provider shall set out its objective reasons for the need for such a study;

(c) the Dominant Provider shall confirm that the request is not sufficiently well formulated and, where it does so, the Dominant Provider shall detail all of the defects in the request which has been made; or

(d) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal.

HH9.7 Where the Dominant Provider responds to a request under paragraph HH9.4 in accordance with paragraph HH9.6(a) it shall, within thirty five working days of receipt of a request under paragraph HH9.4, respond further to the requesting Third Party in writing and:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues.

HH9.8 Where the Dominant Provider responds to a request under paragraph HH9.4 in accordance with paragraph HH9.6(a) and determines, due to a genuine error of fact, that it reasonably needs to complete a feasibility study, it may, as soon as practicable and in any event, within thirty five working days of receipt of a request under paragraph HH9.4, inform the requesting Third Party that a feasibility study is reasonably required and set out its objective reasons for such a study.

HH9.9 Where HH9.8 applies the Dominant Provider shall, within forty five working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required, respond further to the requesting Third party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

HH9.10 The time limit set out in paragraph HH9.9 above shall be extended up to seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph HH9.8, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within forty five working days of the date that the requesting Third Party was informed of the need for a feasibility study pursuant to paragraph HH9.8; or

- the Third Party and the Dominant Provider agree to extend the time limit up to seventy working days.

HH9.11 The time limit set out in paragraph HH9.9 above shall be extended beyond seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph HH9.8, if:

- Ofcom agrees; or

- the Third Party and the Dominant Provider agree to extend the time limit beyond seventy working days.

HH9.12 Where the Dominant Provider responds to a request under paragraph HH9.4 in accordance with paragraph HH9.6(b) the Dominant Provider shall, within sixty working days of receipt of a request under paragraph HH9.4, respond further to the requesting Third Party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

HH9.13 The time limit set out in paragraph HH9.12 above shall be extended up to eighty five working days of receipt of a request under paragraph HH9.4, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within sixty working days of receipt of a request under paragraph HH9.4; or

- the Third Party and the Dominant Provider agree to extend the time limit up to eighty five working days.

HH9.14 The time limit set out in paragraph HH9.12 above shall be extended beyond eighty five working days of receipt of a request under paragraph HH9.4, if:

- Ofcom agrees; or

- the Third Party and the Dominant Provider agree to extend the time limit beyond eighty five working days.

HH9.15 Within two months of the date that this Condition enters into force the Dominant Provider shall provide Ofcom with a description of the processes it has put in place to ensure compliance with this Condition. It shall keep those processes under review to ensure that they remain adequate for that purpose.

HH9.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Schedule 5

The conditions imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of wholesale trunk segments at all bandwidths in which British Telecommunications plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of wholesale trunk segments at all bandwidths within the United Kingdom and shall also apply to Interconnection and Accommodation Services.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Access Charge Change Notice” has the meaning given to it in Condition H6;

“Accommodation Services” mean the provision of space on reasonable terms permitting a Third Party to occupy part of an MDF Site reasonably sufficient to permit the use of one or more disaggregated access and backhaul leased lines products, and in particular to permit the connection of the Dominant Provider’s Electronic Communications Network with that of a Third Party at that location and having the following characteristics:

- (a) the Third Party’s Electronic Communications Network is situated in an area of the MDF Site which:
 - (i) is a single undivided space;
 - (ii) after proper performance by the Dominant Provider of its obligation to provide Network Access pursuant to Condition H1, would permit the normal operation of the Third Party’s Electronic Communications Network (or would permit if the Dominant Provider removed any object or substance whether toxic or not, which might reasonably prevent or hinder the occupation of the MDF Site for such use); and
 - (iii) if so requested by the Third Party, is not unreasonably distant from the Dominant Provider’s Electronic Communications Network within the MDF Site;
- (b) no permanent physical partition is erected in the space between the Third Party’s Electronic Communications Network and the Dominant Provider’s Electronic Communications Network; and
- (c) the Third Party’s Electronic Communications Network is neither owned nor run by the Dominant Provider or by any person acting on the Dominant Provider’s behalf;

“Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Interconnection Services” mean:

- In-Span Handover (“ISH”);
- Customer-Sited Handover (“CSH”); and
- ISH extension circuits.

“MDF Site” means the site of an operational building of the Dominant Provider that houses a main distribution frame;

“Network Component” means to the extent they are used in the Market, or for Interconnection Services, the network components specified in a direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

“Usage Factor” means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition H1 – Requirement to provide network access on reasonable request

H1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

H1.2 The provision of Network Access in accordance with paragraph H1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms and conditions (excluding charges) and on such terms and conditions (excluding charges) as Ofcom may from time to time direct.

H1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition H2 – Requirement not to unduly discriminate

H2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

H2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition H3 – Basis of charges

H3.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition H1 is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs and an appropriate return on capital employed.

H3.2 For the avoidance of any doubt, where the charge offered, payable or proposed for Network Access covered by Condition H1 is for a service which is subject to a charge control under Condition H4, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that such a charge satisfies the requirement of Condition H3.1.

H3.3 The Dominant Provider shall comply with any direction Ofcom may from time to time direct under this Condition.

[Condition H4 – Charge Controls: A potential Charge Control SMP Condition is subject of a separate Consultation published 8 December 2008]

Condition H5 – Requirement to publish a reference offer

H5.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

H5.2 Subject to paragraph H5.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

(a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);

(b) the locations of the points of Network Access;

(c) the technical standards for Network Access (including any usage restrictions and other security issues);

(d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);

(e) any ordering and provisioning procedures;

(f) relevant charges, terms of payment and billing procedures;

(g) details of interoperability tests;

(h) details of maintenance and quality as follows:

(i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);

(ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;

(iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;

(iv) a definition and limitation of liability and indemnity; and

(v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;

(i) details of any relevant intellectual property rights;

(j) a dispute resolution procedure to be used between the parties;

(k) details of duration and renegotiation of agreements;

(l) provisions regarding confidentiality of non-public parts of the agreements;

(m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);

- (n) the standard terms and conditions for the provision of Network Access;
- (o) the amount applied to:
 - (i) each Network Component used in providing Network Access with the relevant Usage Factors;
 - (ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

H5.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs H4.2(a)-(o).

H5.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

H5.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

H5.6 Publication referred to above shall be effected by:

- (a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and
- (b) sending a copy of the Reference Offer to Ofcom.

H5.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

H5.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

H5.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

H5.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition H6 – Requirement to notify charges and terms and conditions

H6.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

H6.2 Save where otherwise provided in Condition H7, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition H1 a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges for new Network Access (an “Access Charge Change Notice”) not less than 90 days before any such amendment comes into effect for existing Network Access, or not less than 28 days before any such amendment comes into effect for new Network Access.

H6.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the terms and conditions associated with the provision of that Network Access;
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “effective date”);
- (d) the current and proposed new charge and the relevant Usage Factors applied to each Network Component comprised in that Network Access, reconciled in each case with the current or proposed new charge; and
- (e) the information specified in sub paragraph (d) above with respect to that Network Access to which that paragraph applies.

H6.4 The Dominant Provider shall not apply any new charge, term and condition identified in an Access Charge Change Notice before the effective date.

H6.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs H5.3(a)-(e).

Condition H7 – Quality of Service

H7.1 The Dominant provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider in such manner and form as Ofcom may from time to time direct.

H7.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition H8 – Requirement to notify technical information

H8.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition H1, the terms and conditions for which comprise new-

(i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(iii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),
or

(b) proposes to amend an existing Access Contract covered by Condition H1 by modifying the terms and conditions listed in paragraph H8.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

H8.2 The Dominant Provider shall ensure that the Notice includes-

(a) a description of the Network Access in question;

(b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;

(c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

H8.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

H8.4 Publication referred to in paragraph H8.1 shall be effected by:

(a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;

(b) sending a copy of the Notice to Ofcom; and

(c) sending a copy of the Notice to any person at that person’s written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition H1. The provision of such a copy of the Notice may be subject to a reasonable charge.

H9 - Requests for new Network Access

H9.1 The Dominant Provider shall for the purposes of transparency publish reasonable guidelines, in relation to requests for new Network Access made to it. Such guidelines shall detail:

- (a) the form in which such a request should be made;
- (b) the information that the Dominant Provider requires in order to consider a request for new Network Access; and
- (c) the time scales in which such requests will be handled by the Dominant Provider in accordance with this Condition.

H9.2 Such guidelines shall be published within two months of the date that this Condition enters into force following a consultation with Ofcom and Third Parties. The Dominant Provider shall keep the guidelines under review and consult with relevant Third Parties and Ofcom before making any amendments to the guidelines.

H9.3 The Dominant Provider shall, upon a reasonable request from a Third Party considering making a request for new Network Access, provide that Third Party with information so as to enable that Third Party to make a request for new Network Access. Such information shall be provided within a reasonable period.

H9.4 On receipt of a written request for new Network Access the Dominant Provider shall ensure that the requirements of this Condition are met. A modification of a request for new Network Access which has previously been submitted to the Dominant Provider, and rejected by the Dominant Provider, shall be considered as a new request.

H9.5 Within five working days of receipt of a request under paragraph H9.4, the Dominant Provider shall acknowledge that request in writing.

H9.6 Within fifteen working days of receipt of a request under paragraph H9.4 the Dominant Provider shall respond in writing to the requesting Third Party in one of the following ways:

- (a) the Dominant Provider shall confirm that the request will be met and shall confirm that the following will be prepared:
 - (i) the timetable for the provision of the new Network Access;
 - (ii) an initial offer of terms and conditions for the provision of the new Network Access; and
 - (iii) the timetable for the agreement of technical issues.
- (b) the Dominant Provider shall confirm that a feasibility study is reasonably required in order to determine whether the request made is reasonable and the Dominant Provider shall set out its objective reasons for the need for such a study;
- (c) the Dominant Provider shall confirm that the request is not sufficiently well formulated and, where it does so, the Dominant Provider shall detail all of the defects in the request which has been made; or
- (d) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal.

H9.7 Where the Dominant Provider responds to a request under paragraph H9.4 in accordance with paragraph H9.6(a) it shall, within thirty five working days of receipt of a request under paragraph H9.4, respond further to the requesting Third Party in writing and:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues.

H9.8 Where the Dominant Provider responds to a request under paragraph H9.4 in accordance with paragraph H9.6(a) and determines, due to a genuine error of fact, that it reasonably needs to complete a feasibility study, it may, as soon as practicable and in any event, within thirty five working days of receipt of a request under paragraph H9.4, inform the requesting Third Party that a feasibility study is reasonably required and set out its objective reasons for such a study.

H9.9 Where H9.8 applies the Dominant Provider shall, within forty five working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required, respond further to the requesting Third party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

H9.10 The time limit set out in paragraph H9.9 above shall be extended up to seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph H9.8, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within forty five working days of the date that the requesting Third Party was informed of the need for a feasibility study pursuant to paragraph H9.8; or
- the Third Party and the Dominant Provider agree to extend the time limit up to seventy working days.

H9.11 The time limit set out in paragraph H9.9 above shall be extended beyond seventy working days from the date that the Dominant Provider informs the requesting Third Party that a feasibility study is reasonably required pursuant to paragraph H9.8, if:

- Ofcom agrees; or
- the Third Party and the Dominant Provider agree to extend the time limit beyond seventy working days.

H9.12 Where the Dominant Provider responds to a request under paragraph H9.4 in accordance with paragraph H9.6(b) the Dominant Provider shall, within sixty working days of receipt of a request under paragraph H9.4, respond further to the requesting Third Party, in writing, in one of the following ways:

(a) the Dominant Provider shall confirm that the request will be met and shall:

- (i) confirm the timetable for the provision of the new Network Access;
- (ii) provide an initial offer of terms and conditions for the provision of the new Network Access; and
- (iii) confirm the timetable for the agreement of technical issues; or

(b) the Dominant Provider shall confirm that the request is refused on the basis that it is not reasonable and, where it does so, the Dominant Provider shall detail its reasons for refusal. The Dominant Provider shall provide to Ofcom a copy of the feasibility study and shall provide to the requesting Third Party a non-confidential copy of the feasibility study.

H9.13 The time limit set out in paragraph H9.12 above shall be extended up to eighty five working days of receipt of a request under paragraph H9.4, if:

- circumstances have arisen which, despite the Dominant Provider using its best endeavours, prevent it from completing the feasibility study within sixty working days of receipt of a request under paragraph H9.4; or

- the Third Party and the Dominant Provider agree to extend the time limit up to eighty five working days.

H9.14 The time limit set out in paragraph H9.12 above shall be extended beyond eighty five working days of receipt of a request under paragraph H9.4, if:

- Ofcom agrees; or

- the Third Party and the Dominant Provider agree to extend the time limit beyond eighty five working days.

H9.15 Within two months of the date that this Condition enters into force the Dominant Provider shall provide Ofcom with a description of the processes it has put in place to ensure compliance with this Condition. It shall keep those processes under review to ensure that they remain adequate for that purpose.

H9.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Schedule 6

The conditions imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface retail leased lines up to and including a bandwidth capacity of eight megabits per second in which British Telecommunications plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of analogue and digital traditional interface retail leased lines up to and including a bandwidth capacity of eight megabits per second within the United Kingdom but not including the Hull Area.

2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the market referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an agreement for the provision of a retail leased line;

“The Market” means the market set out in paragraph 1 above; and

“Third Party” means person.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.

4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.

5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition I1 – Requirement to provide retail leased lines

I1.1 The Dominant Provider shall provide a retail leased line with a bandwidth capacity of up to and including two megabits per second to every Third Party who reasonably requests in writing such a leased line.

I1.2 The provision of retail leased lines in accordance with paragraph I1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms, conditions and charges and on such terms, conditions and charges as Ofcom may from time to time direct.

I1.3 Condition I1.1 shall apply with regards to retail analogue leased lines, or retail traditional interface digital leased lines with a bandwidth capacity of below (but not including) two megabits per second only if:

- (a) the Dominant Provider was supplying that leased line to the Third Party on the date that this Condition enters into force; and
- (b) Ofcom gives notice to the Dominant Provider that:
 - (i) the Dominant Provider has breached the voluntary undertaking which it gave to Ofcom concerning the continued supply of retail analogue leased lines and/or retail traditional interface digital leased lines with a bandwidth capacity below (but not including) two megabits per second and which is set out in a letter from the Dominant Provider to Ofcom dated 20 November 2008 (see Annex 9 to the explanatory statement which accompanies this Notification); or
 - (ii) Ofcom and the Dominant Provider cannot reach an agreement with regards to the supply of these retail leased lines for the period during which Condition I1.1 is in effect but which is not covered by the aforementioned voluntary undertaking.

I1.4 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition I2 – Requirement not to unduly discriminate

I2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with the supply of retail leased lines up to and including a bandwidth capacity of eight megabits per second.

I2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition I3 – Basis of charges

I3.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for analogue retail leased lines is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs and an appropriate return on capital employed.

I3.2 Condition I3.1 shall only apply if Ofcom gives notice to the Dominant Provider that:

- (a) the Dominant Provider has breached the voluntary undertaking which it gave to Ofcom concerning the pricing of the leased lines that are the subject of this Condition, and which is set out in a letter from the Dominant Provider to Ofcom dated 20 November 2008 (see Annex 9 to the explanatory statement which accompanies this Notification); or
- (b) Ofcom and the Dominant Provider cannot reach an agreement with regards to the pricing of the leased lines that are the subject of this Condition for the period during which Condition I3.1 is in effect but which is not covered by the aforementioned voluntary undertaking.

I3.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time.

Condition I4 – Requirement to publish a reference offer

I4.1 The Dominant Provider shall be required to publish a Reference Offer in relation to the provision of retail leased lines of up to and including two megabits per second bandwidth capacity except in so far as Ofcom may otherwise consent in writing and act in the manner set out below.

I4.2 Subject to paragraph I4.7 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of retail leased lines of up to and including two megabits per second bandwidth capacity includes at least the following:

- (a) the technical characteristics, including the physical and electrical characteristics as well as the detailed technical and performance specifications which apply at the network termination point;
- (b) charges, including the initial connection charges, the periodic rental charges and other charges. Where charges are differentiated, this must be indicated;
- (c) information concerning the ordering procedure;
- (d) the contractual period, which includes the period which is in general laid down in the contract and the minimum contractual period which the user is obliged to accept;
- (e) any refund procedure.

14.3 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to retail leased lines of up to and including two megabits per second bandwidth capacity that it is providing as at the date that this Condition enters into force.

14.4 The Dominant Provider shall update and publish the Reference Offer, in relation to any amendments, or in relation to any further retail leased lines of up to and including two megabits per second bandwidth capacity provided after the date that this Condition enters into force, on the same day as such amendments take effect or further retail leased lines are offered.

14.5 Publication referred to above shall be effected by:

(a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and

(b) sending a copy of the Reference Offer to Ofcom.

14.6 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

14.7 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

14.8 The Dominant Provider shall provide retail leased lines of up to and including two megabits per second bandwidth capacity at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly, unless Ofcom otherwise directs. In addition, where, in response to a particular request, the Dominant Provider considers it unreasonable to provide a retail leased line of up to and including two megabits per second bandwidth capacity at the charges, terms and conditions set out in the relevant Reference Offer, it may only depart from its Reference Offer with the consent of Ofcom.

14.9 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Schedule 7

The conditions imposed on KCOM (Hull) plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second in which KCOM (Hull) plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second within the Hull Area.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Dominant Provider” means KCOM Group plc whose registered company number is 2150618 and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Network Component” means to the extent they are used in the Market the network components specified in a Direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

"Usage Factor" means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition GA1 – Requirement to provide network access on reasonable request

GA1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

GA1.2 The provision of Network Access in accordance with paragraph GA1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms, conditions and charges and on such terms, conditions and charges as Ofcom may from time to time direct.

GA1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GA2 – Requirement not to unduly discriminate

GA2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

GA2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition GA3 – Requirement to publish a reference offer

GA3.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

GA3.2 Subject to paragraph GA3.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;

- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
 - (iv) a definition and limitation of liability and indemnity; and
 - (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);
- (n) the standard terms and conditions for the provision of Network Access;
- (o) the amount applied to:
 - (i) each Network Component used in providing Network Access with the relevant Usage Factors;
 - (ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

GA3.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself

which includes, where relevant, at least those matters detailed in paragraphs GA3.2(a)-(o).

GA3.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

GA3.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

GA3.6 Publication referred to above shall be effected by:

(a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and

(b) sending a copy of the Reference Offer to Ofcom.

GA3.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

GA3.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

GA3.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

GA3.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GA4 – Requirement to notify technical information

GA4.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition GA1, the terms and conditions for which comprise new-

(i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(ii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),

or

(b) proposes to amend an existing Access Contract covered by Condition GA1 by modifying the terms and conditions listed in paragraph GA4.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

GA4.2 The Dominant Provider shall ensure that the Notice includes-

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

GA4.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

GA4.4 Publication referred to in paragraph GA4.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and
- (c) sending a copy of the Notice to any person at that person’s written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition GA1. The provision of such a copy of the Notice may be subject to a reasonable charge.

Condition GA5 – Basis of charges

GA5.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition GA1 is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

GA5.2 Condition GA5.1 shall only apply if Ofcom gives notice to the Dominant Provider that the Dominant Provider has breached the voluntary undertaking which it gave to Ofcom concerning the pricing of the leased lines that are the subject of this Condition, and which is set out in a letter from the Dominant Provider to Ofcom dated 19 November 2008 (see Annex 9 to the explanatory statement which accompanies this Notification).

GA5.3 The Dominant Provider shall comply with any direction Ofcom may from time to time direct under this Condition.

Schedule 8

The conditions imposed on KCOM (Hull) plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second in which KCOM (Hull) plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second within the Hull Area.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Dominant Provider” means KCOM Group plc whose registered company number is 2150618 and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Network Component” means to the extent they are used in the Market the network components specified in a Direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

"Usage Factor" means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition GGA1 – Requirement to provide network access on reasonable request

GGA1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

GGA1.2 The provision of Network Access in accordance with paragraph GGA1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms, conditions and charges and on such terms, conditions and charges as Ofcom may from time to time direct.

GGA1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GGA2 – Requirement not to unduly discriminate

GGA2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

GGA2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition GGA3 – Requirement to publish a reference offer

GGA3.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

GGA3.2 Subject to paragraph GGA3.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;

- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
 - (iv) a definition and limitation of liability and indemnity; and
 - (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);
- (n) the standard terms and conditions for the provision of Network Access;
- (o) the amount applied to:
 - (i) each Network Component used in providing Network Access with the relevant Usage Factors;
 - (ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

GGA3.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself

which includes, where relevant, at least those matters detailed in paragraphs GGA3.2(a)-(o).

GGA3.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

GGA3.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

GGA3.6 Publication referred to above shall be effected by:

(a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and

(b) sending a copy of the Reference Offer to Ofcom.

GGA3.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

GGA3.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

GGA3.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

GGA3.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GGA4 – Requirement to notify technical information

GGA4.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition GGA1, the terms and conditions for which comprise new-

(i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(ii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),

or

(b) proposes to amend an existing Access Contract covered by Condition GGA1 by modifying the terms and conditions listed in paragraph GGA4.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

GGA4.2 The Dominant Provider shall ensure that the Notice includes-

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

GGA4.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

GGA4.4 Publication referred to in paragraph GGA4.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and
- (c) sending a copy of the Notice to any person at that person’s written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition GGA1. The provision of such a copy of the Notice may be subject to a reasonable charge.

Condition GGA5 – Basis of charges

GGA5.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs and an appropriate return on capital employed.

GGA5.2 This Condition shall only apply if Ofcom gives notice to the Dominant Provider that the Dominant Provider has breached the voluntary undertaking which it gave to Ofcom concerning the pricing of the leased lines that are the subject of this Condition, and which is set out in a letter from the Dominant Provider to Ofcom dated 19 November 2008 (see Annex 9 to the explanatory statement which accompanies this Notification).

GGA5.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time.

Schedule 9

The conditions imposed on KCOM (Hull) plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second in which KCOM (Hull) plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second within the Hull Area.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Dominant Provider” means KCOM Group plc whose registered company number is 2150618 and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Network Component” means to the extent they are used in the Market the network components specified in a Direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

"Usage Factor" means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition GGB1 – Requirement to provide network access on reasonable request

GGB1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

GGB1.2 The provision of Network Access in accordance with paragraph GGB1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms, conditions and charges and on such terms, conditions and charges as Ofcom may from time to time direct.

GGB1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GGB2 – Requirement not to unduly discriminate

GGB2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

GGB2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition GGB3 – Requirement to publish a reference offer

GGB3.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

GGB3.2 Subject to paragraph GGB3.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;

- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
 - (iv) a definition and limitation of liability and indemnity; and
 - (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);
- (n) the standard terms and conditions for the provision of Network Access;
- (o) the amount applied to:
 - (i) each Network Component used in providing Network Access with the relevant Usage Factors;
 - (ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

GGB3.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself

which includes, where relevant, at least those matters detailed in paragraphs GGB3.2(a)-(o).

GGB3.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

GGB3.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

GGB3.6 Publication referred to above shall be effected by:

(a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and

(b) sending a copy of the Reference Offer to Ofcom.

GGB3.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

GGB3.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

GGB3.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

GGB3.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition GGB4 – Requirement to notify technical information

GGB4.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition GGB1, the terms and conditions for which comprise new-

(i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(ii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),

or

(b) proposes to amend an existing Access Contract covered by Condition GGB1 by modifying the terms and conditions listed in paragraph GGB4.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the "Notice") of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either

the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

GGB4.2 The Dominant Provider shall ensure that the Notice includes-

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider's Reference Offer of the relevant terms and conditions;
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the "effective date").

GGB4.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

GGB4.4 Publication referred to in paragraph GGB4.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and
- (c) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition GGB1. The provision of such a copy of the Notice may be subject to a reasonable charge.

Condition GGB5 – Basis of charges

GGB5.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs and an appropriate return on capital employed.

GGB5.2 This Condition shall only apply if Ofcom gives notice to the Dominant Provider that the Dominant Provider has breached the voluntary undertaking which it gave to Ofcom concerning the pricing of the leased lines that are the subject of this Condition, and which is set out in a letter from the Dominant Provider to Ofcom dated 19 November 2008 (see Annex 9 to the explanatory statement which accompanies this Notification).

GGB5.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time.

Schedule 10

The conditions imposed on KCOM (Hull) plc under the Communications Act 2003 as a result of the analysis of the market for the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second in which KCOM (Hull) plc has been found to have significant market power

Part 1: Definitions and Interpretation of these conditions

1. These conditions shall apply to the market for the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the Hull Area.
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the markets referred to in paragraph 1 the following definitions shall apply:

“Act” means the Communications Act 2003;

“Dominant Provider” means KCOM Group plc whose registered company number is 2150618 and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“the Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Network Component” means to the extent they are used in the Market the network components specified in a Direction given by Ofcom from time to time for the purpose of these conditions;

“Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract;

“The Market” means the market set out in paragraph 1 above;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network;

“Transfer Charge” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market and the use of Network Components in that Market; and

"Usage Factor" means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Save for the purposes of paragraph 1, except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act.
4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.
5. Headings and titles shall be disregarded.

Part 2: The conditions

Condition HA1 – Requirement to provide network access on reasonable request

HA1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

HA1.2 The provision of Network Access in accordance with paragraph HA1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms, conditions and charges and on such terms, conditions and charges as Ofcom may from time to time direct.

HA1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition HA2 – Requirement not to unduly discriminate

HA2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

HA2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition HA3 – Basis of charges

HA3.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition HA1 is reasonably derived from the costs of provision based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

HA3.2 The Dominant Provider shall comply with any direction Ofcom may from time to time direct under this Condition.

Condition HA4 – Requirement to publish a reference offer

HA4.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

HA4.2 Subject to paragraph HA4.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of Network Access);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;
- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
 - (iv) a definition and limitation of liability and indemnity; and
 - (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);
- (n) the standard terms and conditions for the provision of Network Access;
- (o) the amount applied to:
 - (i) each Network Component used in providing Network Access with the relevant Usage Factors;
 - (ii) the Transfer Charge for each Network Component or combination of Network Components described above;

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

HA4.3 to the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs HA4.2(a)-(o).

HA4.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date that this Condition enters into force.

HA4.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further Network Access provided after the date that this Condition enters into force.

HA4.6 Publication referred to above shall be effected by:

- (a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and
- (b) sending a copy of the Reference Offer to Ofcom.

HA4.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested).

HA4.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

HA4.9 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

HA4.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition HA5 – Requirement to notify technical information

HA5.1 Save where Ofcom consents otherwise, where the Dominant Provider-

(a) proposes to provide Network Access covered by Condition HA1, the terms and conditions for which comprise new-

- (i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);

(ii) locations of the points of Network Access; or

(iii) technical standards (including any usage restrictions and other security issues),

or

(b) proposes to amend an existing Access Contract covered by Condition HA1 by modifying the terms and conditions listed in paragraph HA5.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the "Notice") of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect.

HA5.2 The Dominant Provider shall ensure that the Notice includes-

(a) a description of the Network Access in question;

(b) a reference to the location in the Dominant Provider's Reference Offer of the relevant terms and conditions;

(c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the "effective date").

HA5.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

HA5.4 Publication referred to in paragraph HA5.1 shall be effected by:

(a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;

(b) sending a copy of the Notice to Ofcom; and

(c) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition HA1. The provision of such a copy of the Notice may be subject to a reasonable charge.

THE DIRECTIONS

Schedule 11

Direction under section 49 of the Communications Act 2003 ('the Act') and SMP Services Condition G1 imposed on British Telecommunications plc ('BT') as a result of the market power determinations made by the Office of Communications ('Ofcom') that BT has significant market power in the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second for the UK (excluding the Hull Area)

WHEREAS:

- (A) As a result of a market analysis carried out by Ofcom, it determined on 8 December 2008, in accordance with sections 48 (1) and 80 of the Act, that the Dominant Provider has significant market power in the markets for the provision of wholesale traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second for the UK (excluding the Hull Area);
- (B) In accordance with section 79 of the Act Ofcom set SMP Service Condition G1 which imposes various obligations on the Dominant Provider, *inter alia*, the obligation to comply with any Direction Ofcom may from time to time make under this Condition;
- (C) This Direction concerns matters to which Condition G1 relates;
- (D) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that, in accordance with section 49(2) of the Act, this Direction is:
 - (i) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
 - (ii) not such as to discriminate unduly against particular persons or against a particular description of persons;
 - (iii) proportionate to what it is intended to achieve; and
 - (iv) in relation to what it is intended to achieve, transparent;
- (E) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that it has acted in accordance with the relevant duties set out in sections 3 and 4 of the Act;
- (F) Ofcom has on 17 January 2008 published a notification of the proposed Direction in accordance with section 49 of the Act;
- (G) By virtue of section 49(9) of the Act, Ofcom may give effect to any proposals to give the Direction with or without modification, where
 - (i) it has considered every representation about the proposals duly made to OFCOM, within the time period specified in the Consultation Notification; and
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State; and
- (H) OFCOM received responses to the proposed Direction and has considered every such representation duly made to it in respect of the proposals; and the Secretary of State has

not notified OFCOM of any international obligation of the United Kingdom for this purpose;

NOW, therefore, pursuant to Condition G1 Ofcom makes the following Direction:

Definitions

For the purpose of interpreting this Direction the following definitions shall apply:

“Act” means the Communications Act 2003;

“Dominant Provider” means British Telecommunications plc (‘BT’), whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by Section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Point of Connection” means a point at which the Dominant Provider’s Electronic Communications Network and another person’s Electronic Communications Network are connected;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network.

For the purpose of this Direction the following terms shall have the meaning as set out in the Dominant Provider’s Standard PPC Handover Agreement, as at the date of publication of this Direction, but with the necessary changes in order to ensure compliance with the Direction:

- Advance Capacity Order
- Advance Order Commitment
- BT Retail Private Circuit
- BT Serving Node
- Capacity Order
- Capacity Profile
- Customer Sited Handover (“CSH”)
- Forecast Profile
- In-Span Handover (“ISH”)
- Re-Designation

- Qualifying BT Retail Private Circuit

The following definitions shall also apply for the purpose of this Direction:

Term	Definition
Acceptance of Terms	Date on which a Third Party confirms acceptance of delivery conditions and is committed to the order.
Civil Works	Works that necessitate the digging up of a street for the installation of ducts.
Committed Delivery Date	The date confirmed by the Dominant Provider as the delivery date.
Firm Offer Confirmation (“FOC”)	Confirmation by the Dominant Provider in writing (by fax or e-mail) to a Third Party of the delivery conditions including price and Committed Delivery Date, after acknowledging receipt of an order for a Partial Private Circuit or Network Infrastructure from a Third Party.
FOC Acceptance Interval	The number of working days from the FOC Date until the Acceptance of Terms.
FOC Date	The date on which the Dominant Provider makes a Firm Offer Confirmation.
FOC Receipt Interval	The number of working days from the Order Request Date until the FOC Date.
Installation Date	Date of installation of a Partial Private Circuit or Network Infrastructure.
Network Infrastructure	The categories of products listed in the table contained in paragraph 51 of this Direction.
Order Request Date	Date on which a Third Party dispatches a valid Partial Private Circuit order, or Network Infrastructure order, to the Dominant Provider.
Partial Private Circuit (“PPC”)	A circuit provided pursuant to the PPC Contract and in accordance with the Directions.
PPC Contract	The Dominant Provider's Standard PPC Handover Agreement as at the date of publication of this Direction.
Provisioning Interval	The number of working days from the Order

	Request Date until the Installation Date.
Requisite Period	The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in paragraphs 41 and 51 of this Direction.
Reduced Requisite Period	The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in paragraphs 44 and 54 of this Direction.
Subsequent Partial Private Circuit	A Partial Private Circuit which can be delivered on dedicated pre-provided Network Infrastructure where spare capacity exists.

Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them.

The Interpretation Act 1978 shall apply as if this Direction was an Act of Parliament.

Headings and titles shall be disregarded.

The Dominant Provider shall provide Partial Private Circuits and shall do so in accordance with this Direction.

Migration

1. The 12 month contractual minimum term placed upon a Third Party, for the provision of a Partial Private Circuit which has been migrated pursuant to the PPC Contract, shall be measured from the date that the original BT Retail Private Circuit was brought into service.
2. The Dominant Provider shall not impose any deadline before which a Third Party must inform the Dominant Provider that it requires a BT Retail Private Circuit to be migrated to an equivalent Partial Private Circuit status under the PPC Contract.
3. The Dominant Provider shall allow a BT Retail Private Circuit, which fell within paragraph 1.3 of the Phase 1 PPC Direction published on 14 June 2002, to be considered under the PPC Contract as a Qualifying BT Retail Private Circuit.
4. A circuit deemed to be a Qualifying BT Retail Private Circuit under paragraphs 20 or 21 of the Phase 2 PPC Direction published on 23 December 2002 shall continue to be a Qualifying BT Retail Private Circuit.
5. Where a Third Party was not previously eligible to migrate a BT Retail Private Circuit to a Qualifying BT Retail Private Circuit, but subsequently becomes eligible to do so, the Dominant Provider shall, for 60 working days following the date on which the Third Party's circuits become eligible for migration, allow migration without the Third Party incurring any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits.
6. Where, at the date of publication of this Direction, the Dominant Provider offers a BT Retail Private Circuit product and does not offer an equivalent Partial Private Circuit product, but subsequently offers to provide an equivalent Partial Private Circuit product, it shall allow a Third Party to migrate to the equivalent Partial Private Circuit product without it incurring

any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits, for a period of 60 working days following the date on which the equivalent Partial Private Circuit product is first offered by the Dominant Provider.

7. Where the Dominant Provider has taken, or will take, longer than five working days from receiving a request from a Third Party to migrate a Qualifying BT Retail Private Circuit to a Partial Private Circuit, it shall give to the Third Party a refund as set out in paragraphs 8 and 9 of this Direction.

8. Where paragraph 7 of this Direction applies, the Dominant Provider shall refund to the Third Party a sum of money equal to the difference between:

- the charge levied by the Dominant Provider for the BT Retail Private Circuit to which the request for migration relates; and
- the charge levied by the Dominant Provider for the Partial Private Circuit to which the request for migration relates.

9. The refund set out in paragraph 8 of this Direction shall cover the period from the date the Dominant Provider receives the request to migrate until the date the Dominant Provider completes the migration.

10. The Dominant Provider shall, upon a Third Party's written request, provide to the Third Party a map of its network within the United Kingdom which clearly illustrates and labels the geographic location of each Dominant Provider tier 1, tier 1.5, tier 2, and tier 3 nodes.

Forecasts

11. The Dominant Provider shall only require a Third Party to provide a profile of future Partial Private Circuit capacity ordering intentions over a 12 month period, on a national aggregate basis for groupings of bandwidths no narrower than the following:

- less than 1 Mbit/s; and
- 1 Mbit/s through to 2 Mbit/s.

12. The Dominant Provider shall allow a Third Party to set its Advance Capacity Order and Advance Order Commitment without any penalty by up to, 10% (by volume) below, or 20% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile for the period covered by the Advance Capacity Order or Advance Order Commitment.

13. The Dominant Provider shall allow a Third Party to revise periods covered by its previously stated Capacity Profile and Forecast Profile without any penalty by up to, 30% (by volume) below, or 30% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile, provided that paragraph 12 of this Direction does not apply.

14. In calculating any increase to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded up to the nearest integer.

15. In calculating any decrease to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded down to the nearest integer.

16. Where a Third Party places a Capacity Order at a Point of Connection for the period corresponding to that of the Advance Capacity Order, which total less than its Advance Capacity Order for the Point of Connection, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}2,490$$

Where B is the total capacity provision by number of VC4-equivalent units specified in the relevant Advance Capacity Order in respect of each Point of Connection; and

Where C is the number of VC4-equivalents ordered during the period to which the relevant Advance Capacity Order relates in respect of each Point of Connection, but does not include cancellations of Capacity Orders made during or after the relevant Advanced Capacity Order period, but does include any Capacity Order cancelled as a result of the inability of the Dominant Provider to secure consents for CSH links.

17. Where a Third Party places orders for Partial Private Circuits below 1 Mbit for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for the Partial Private Circuits below 1 Mbit, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}52$$

Where B is the total Advance Order Commitment for Private Partial Circuits below 1 Mbit; and

Where C is the number of Partial Private Circuits below 1 Mbit ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of the Dominant Provider to secure consents for Partial Private Circuits.

18. Where a Third Party places orders for Partial Private Circuits from 1 Mbit through to 2 Mbit/s for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for Partial Private Circuits from 1 Mbit through to 2 Mbit/s, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}143$$

Where B is the total Advance Order Commitment for Private Partial Circuits from 1 Mbit through to 2 Mbit/s; and

Where C is the number of Partial Private Circuits from 1 Mbit through to 2 Mbit/s ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of Dominant Provider to secure consents for Partial Private Circuits.

19. [Paragraph not used].

20. In calculating (80% of B) in paragraphs 16 to 18 inclusive of this Direction the outcome shall, if not an integer, be rounded down to the nearest integer.

Service level agreements (SLAs)

General

21. The Dominant Provider shall set a Committed Delivery Date for each Partial Private Circuit or Network Infrastructure ordered from it by a Third Party and shall be required to provide reasons to justify a Committed Delivery Date which is set beyond the relevant Requisite Period (RP) and that any extension of the Committed Delivery Date beyond the relevant Requisite Period (RP) shall be made subject to the consent of the Third Party concerned whose consent shall not be unreasonably withheld.

22. For each Partial Private Circuit or Network Infrastructure ordered from the Dominant Provider by a Third Party, the Dominant Provider shall provide to a Third Party Firm Offer Confirmation in the manner set out in the definition section of this Direction.

23. The time scales and levels of fixed individual compensation payments to be payable under the service level agreement shall be those set out in paragraph 34 of this Direction, unless otherwise agreed between the Dominant Provider and a Third Party, or except to the extent that Ofcom otherwise consents.

24. Unless otherwise agreed between the Dominant Provider and a Third Party, any fixed individual compensation payment, or reimbursement pursuant to paragraph 28 of this Direction, payable by the Dominant Provider to a Third Party pursuant to the Directions shall be offset by the Dominant Provider against the money owed to it by the Third Party, on a quarterly basis. The Dominant Provider shall keep complete and accurate records of the amounts it has offset in accordance with this paragraph. Such records shall be made available by the Dominant Provider following a request by a Third Party.

25. The Dominant Provider shall not be liable to pay fixed individual compensation payments pursuant to the Directions for periods of delay which arise due to circumstances beyond its reasonable control. The Dominant Provider shall notify a Third Party as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the Dominant Provider. Major construction works shall not be considered circumstances beyond the Dominant Provider's reasonable control.

26. The Dominant Provider shall ensure that any time limits set out in this Direction shall not apply to a Third Party to the extent that periods of delay arise due to circumstances beyond its reasonable control. The Third Party shall notify the Dominant Provider as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the relevant Third Party.

27. The Dominant Provider shall, at the reasonable request of a Third Party, postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure if such postponement is technically and organisationally reasonable. In agreeing to such a postponement the Dominant Provider shall only charge for reasonable additional expenses it has directly incurred as a result of the postponement.

28. The Dominant Provider shall only postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure with the written agreement of the Third Party. The Dominant Provider shall inform the Third Party as soon as reasonably possible of any

proposed postponement of the Committed Delivery Date. Where such a postponement takes place the Dominant Provider shall reimburse the Third Party for any reasonable additional cost incurred by the Third Party as a direct result of the postponement.

29. The FOC Receipt Interval shall be a maximum of:

- five working days for Partial Private Circuits of less than 2 Mbit/s; and
- eight working days for Partial Private Circuits of 2 Mbit/s and Network Infrastructure;

regardless of how many Partial Private Circuits are, or the amount of Network Infrastructure is, ordered at a particular site.

30. The Dominant Provider shall ensure that the FOC Acceptance Interval is a maximum of one working day for Partial Private Circuits of 2 Mbit/s or below and two working days for Network Infrastructure. Where a Third Party has not informed the Dominant Provider of its Acceptance of Terms or rejection of the order within five working days of the FOC Date, the Dominant Provider may cancel the Third Party's order.

31. The Dominant Provider shall keep complete and accurate records of the ordering, provision and repair of Partial Private Circuits and Network Infrastructure it provides to a Third Party.

32. Where any Partial Private Circuit or Network Infrastructure which is ordered by a Third Party is in excess of 110% (by volume), rounded up to the nearest integer where necessary, of its Advance Order Commitment or Advance Capacity Order, the applicable Requisite Period set out in the tables in paragraphs 41 and 51 of this Direction shall be extended by 50% and rounded up to the nearest working day, where necessary, for the purposes of calculating fixed individual compensation payments.

Unliquidated damages

33. Nothing in the PPC Contract, as amended by the Direction, shall prevent a Third Party from bringing a claim against the Dominant Provider for unliquidated damages over and above the fixed individual compensation payments set out in the Direction.

Service level guarantees (SLGs)

Modifications to the PPC Contract

34. The Dominant Provider shall amend the terms and conditions which govern the supply of Partial Private Circuits set out in the PPC Contract to provide the following:

Compensation per event and value of compensation

- a) The Dominant Provider shall pay the Third Party compensation for each day or part day of delay in delivery of service beyond the Committed Delivery Date or the Third Party's Requirement Date (whichever is later).
- b) The Dominant Provider shall pay the Third Party compensation for each and every fault which has not been restored:
 - for Regular Care customers, in the first two days on a per day basis thereafter; and
 - for Enhanced Care customers, in the first five hours on a per hour basis thereafter.

c) The compensation payable in event of the each late provision of the required Partial Private Circuit or Network Infrastructure service shall be set at 100% of one month's line rental (or Network Infrastructure rental) for every day or part day of delay beyond the Committed Delivery Date or Requirement Date (whichever is later), up to a maximum of 60 days.

d) The compensation payable in the event of each late fault repair in relation to a Partial Private Circuit or Network Infrastructure shall be:

- for Regular Care customers, 100% of one month's line rental for every fault which has not been restored in the first two days for every day thereafter until service is restored, up to a maximum of 30 days; and
- for Enhanced Care customers, 15% of one month's line rental for every fault which has not been restored in the first five hours for every hour thereafter until service is restored, up to a maximum of 200 hours.

e) Any limits on compensation payable as a result of a failure to satisfy the service guarantees shall be removed other than those set out in (c) and (d) above.

Additional losses

f) Any compensation payable under the contract shall be without prejudice to any right of either party to claim for additional loss.

Proactive payments

g) The Dominant Provider shall monitor its performance against the service guarantees for fault repair and provision and compensate Third Parties proactively should it fail to satisfy the service guarantees. Compensation payments shall be made as soon as possible after the event and not later than the billing cycle following the billing cycle after the event unless not practicable. For the avoidance of doubt, compensation shall be payable without the need for a Third Party to make a claim.

35. The terms and conditions amended as set out in paragraph 34 above shall take effect from the 90th day after the publication of the Final Statement.

Partial Private Circuits

Quick quote and very high bandwidth quote on line

36. The Dominant Provider shall provide to a Third Party, upon written request, the necessary wholesale network and pricing information to enable the Third Party to obtain the same information for Partial Private Circuits that is available to the Dominant Provider's retail arm, for its "Quick Quote" quote facilities.

Concurrency of Partial Private Circuit and ISH link and CSH link delivery times

37. Where a Third Party has ordered a Partial Private Circuit, and the operation of the circuit requires the provision of an ISH link or CSH link, the Dominant Provider shall ensure that the delivery dates of the Partial Private Circuit and the CSH link or ISH link are the same.

Expedited orders

38. Upon a Third Party's written request, the Dominant Provider shall make reasonable endeavours to set a Committed Delivery Date for Partial Private Circuits within 50% of the relevant Requisite Period set out in the table in paragraph 41 of this Direction, rounded up to

the nearest working day where necessary, for at least 15% (by volume) of a Third Party's previous month's order. The Third Party shall inform the Dominant Provider which particular Partial Private Circuits it shall endeavour to be expedited pursuant to this paragraph. This paragraph shall only apply to the delivery of Partial Private Circuits of 2 Mbit/s or less. This paragraph shall not apply to Partial Private Circuits which exceed 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment.

39. Paragraph 48 of this Direction does not apply to orders of Partial Private Circuits made pursuant to paragraph 38 of this Direction.

Time scales for fixed individual compensation

40. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 41 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

41. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Bandwidth of Partial Private Circuit	Requisite Period
64 kbit/s	10 working days
128 kbit/s to 256 kbit/s delivered over copper	10 working days
128 kbit/s to 256 kbit/s delivered over fibre	30 working days
320 kbit/s to 960 kbit/s	30 working days
1 Mbit/s	30 working days
2 Mbit/s	30 working days
Subsequent Partial Private Circuit of 2 Mbit/s	10 working days

Third Party's ability to cancel order

42. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 41 of this Direction, a Third Party shall be allowed to cancel its order for a Partial Private Circuit after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 41 of this Direction. The Requisite Periods in the table in paragraph 41 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of a Partial Private Circuit which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 41 of this Direction	Cancellation Threshold
10 working days	10 working days

30 working days	20 working days
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43. Where a Third Party cancels a Partial Private Circuit pursuant to paragraph 42 of this Direction, the Dominant Provider shall not charge the Third Party for the circuit and shall not charge for cancelling the circuit. The Dominant Provider shall also be liable to pay the Third Party any fixed individual compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite Periods for Partial Private Circuits

44. The Dominant Provider shall ensure that for at least 70% (by volume) of Partial Private Circuits of a particular bandwidth delivered by the Dominant Party to a Third Party within a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Bandwidth of Partial Private Circuit	Reduced Requisite Period
128 kbit/s to 256 kbit/s delivered over fibre	20 working days
320 kbit/s to 960 kbit/s	20 working days
1 Mbit/s	20 working days
2 Mbit/s	20 working days

45. In calculating the 70% (by volume) of Partial Private Circuits to which paragraph 44 of this Direction applies the following shall not be included:

- Partial Private Circuits of 64 kbit/s;
- Partial Private Circuits of 128 kbit/s to 256 kbit/s delivered over copper;
- Subsequent Private Partial Circuits of 2Mbit/s;
- Partial Private Circuit orders to which paragraph 38 of this Direction applies; and
- Partial Private Circuits which exceed 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment.

46. The Reduced Requisite Periods set out in the table in paragraph 44 of this Direction apply only if, in the previous three month reporting period (such period not to be calculated on a rolling basis), a Third Party has ordered from the Dominant Provider at least ten Partial Private Circuits of the same bandwidth where such Partial Private Circuits are 2 Mbit/s or less.

47. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment has been exceeded, the calculation shall be at a national level for each individual Partial Private Circuit bandwidth category and applied in the order in which the Partial Private Circuits were ordered by the Third Party.

Multiple orders

48. Where the Dominant Provider receives an order for more than 10 Partial Private Circuits at one site from a Third Party, the relevant Requisite Period applicable to determine whether the Dominant Provider shall pay fixed individual compensation as set out in paragraphs 40 and 41 of this Direction, shall be the relevant Requisite Period set out in the table in paragraph 41 of this Direction increased by a maximum of 50%. The Dominant Provider shall inform the Third Party of the revised time scales as soon as reasonably practicable.

Availability of service

49. When total loss of service (i.e. total loss of service for one minute or longer) occurs three or more times, within a 12 month period, to a Partial Private Circuit, the Third Party shall not be liable to the Dominant Provider for the monthly rental in any subsequent month where total loss of failure occurs to the Partial Private Circuit, until such time as 12 months have passed and the Partial Private Circuit has not suffered total loss of service. Occurrences of total loss of service which result in the Dominant Provider being liable to pay fixed individual compensation pursuant to paragraphs 62, 63 and 64 of this Direction, shall not be considered as an occurrence of a total loss of service for the purposes of this paragraph.

Network Infrastructure

Time scales for fixed individual compensation

50. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 51 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

51. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Network Infrastructure	Requisite Period (where the Dominant Provider needs to carry out Civil Works)	Requisite Period (where the Dominant Provider does not need to carry out Civil Works)
ISH links	110 working days	85 working days
CSH links	110 working days	85 working days
ISH links – provision of new multiplexor on an existing Point of Connection	Not applicable	60 working days
ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	60 working Days

CSH links - provision of new multiplexor on existing Point of Connection	Not applicable	60 working Days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	25 working Days

Third Party's ability to cancel order

52. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 51 of this Direction, a Third Party shall be allowed to cancel its order for Network Infrastructure after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 51 of this Direction. The Requisite periods in the table in paragraph 51 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of Network Infrastructure which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 51 of this Direction	Cancellation Threshold
21 to 40 working days	20 working days
41 to 60 working days	25 working days
61 to 90 working days	30 working days
Over 90 working days	40 working days

53. Where a Third Party cancels Network Infrastructure pursuant to paragraph 52 of this Direction, the Dominant Provider shall not charge the Third Party for the Network Infrastructure and shall not charge for cancelling the Network Infrastructure. The Dominant Provider shall also be liable to pay the Third Party any fixed compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite periods for Network Infrastructure

54. The Dominant Provider shall ensure that for at least 70% (by volume) of the total VC4-equivalents of Network Infrastructure delivered by it to a Third Party during a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Network Infrastructure	Reduced Requisite Period (where the Dominant Provider needs to carry out Civil Works)	Reduced Requisite Period where the Dominant Provider does not need to carry out Civil Works)
ISH links	75 working days	60 working days
CSH links	75 working days	60 working days
ISH links - provision of new multiplexor on an		

existing Point of Connection	Not applicable	40 working days
ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	40 working days
CSH links - provision of new multiplexor on existing Point of Connection	Not applicable	40 working days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	20 working days

55. In calculating the 70% (by volume) of the total VC4-equivalents of Network Infrastructure to which paragraph 54 of this Direction applies the following shall not be included:

- Network Infrastructure which exceeds 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order.

56. The Reduced Requisite Periods set out in the table in paragraph 54 of this Direction only apply if, in the previous three month reporting period (such period not to be calculated on a rolling basis) a Third Party has ordered from the Dominant Provider at least 2 VC4-equivalents of Network Infrastructure. For the purposes of this paragraph the first reporting period of three months shall be the first such reporting period falling after 30 working days following the date of publication of this Direction.

57. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order has been exceeded, the calculation shall be made using VC4-equivalents at each Point of Connection applied in the order in which the Network Infrastructure was ordered by the Third Party.

Repair of Partial Private Circuits and Network Infrastructure

58. Where the Dominant Provider offers to a Third Party Regular Care and Enhanced Care for Partial Private Circuits and Network Infrastructure it shall do so at a cost orientated price and as set out in the table below:

	Operational hours	Repair/response time	Extras
Regular Care	Normal working hours	Response within one working day of receipt of a fault report by a Third Party. Repair within two working days of receipt of a fault report by a Third	If a fault is not remedied within two working days of receipt of a fault report by a Third Party, the Dominant Provider shall call the Third Party to report progress being made to remedy the

		Party.	fault.
Enhanced Care	24 hours per day, 7 days per week (including public and bank holidays).	Response within four hours of receipt of a fault report from a Third Party. Repair within five hours of receipt of a fault report by a Third Party.	If a fault is not remedied within five hours of receipt of a fault report by a Third Party, the Dominant Provider shall contact the Third Party to report progress being made to remedy the fault.

59. Receipt by the Dominant Provider from a Third Party of a report of a fault concerning a Partial Private Circuit or Network Infrastructure, shall be acknowledged by the Dominant Provider to the Third Party within one hour.

60. Where the Dominant Provider fails to repair a Partial Private Circuit within the time limits set out in the table in paragraph 58 of this Direction it shall pay to the Third Party a fixed individual compensation payment as set out in paragraphs 61 to 65 inclusive of this Direction in respect of the period commencing on the expiry of the applicable repair time set out in the table in paragraph 58 and expiring at the time the Partial Private Circuit or Network Infrastructure is repaired.

61. Where the Third Party has ordered the Dominant Provider's Regular Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

62. Where the Third Party has ordered the Dominant Provider's Regular Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

63. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

64. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

65. The Dominant Provider shall not be liable to pay fixed individual compensation pursuant to paragraphs 62 and 64 of this Direction where it is also liable for fixed individual compensation pursuant to paragraphs 61 and 63 of this Direction where the Partial Private Circuit is being provided using the Network Infrastructure which is being repaired.

66. The Dominant Provider shall attend, and invite Third Parties to regular meetings to review the level of service provided by it in relation to Partial Private Circuits and related Network Infrastructure.

Change of speed or interface

67. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request, the ability to alter the speed or interface of a Partial Private Circuit.

68. The Dominant Provider shall ensure that it provides to a Third Party a Partial Private Circuit variant for the services to which paragraph 67 of this Direction applies, which are equivalent to the services it currently provides on a retail basis for retail leased lines.

STM-1, ISH and CSH handover

69. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request for a Synchronous Transfer Mode-1 ("STM-1"), an interface using an ISH link or CSH link; and handover pursuant to paragraph 70 of this Direction. Such link or handover shall be provided by way of network connecting apparatus capable of providing no more than the STM-1 capacity ordered by the Third Party.

70. The Dominant Provider shall within a reasonable period of a Third Party's written request, handover in a footway jointing chamber for Partial Private Circuits at a reasonable point nominated by the Third Party. The footway jointing chamber shall be located in the same Dominant Provider local serving exchange area as the Dominant Provider Serving Node to which the Partial Private Circuits being handed over are connected.

Equipment re-use

71. Paragraph 72 of this Direction shall only apply to the re-use of Plesiochronous Digital Hierarchy ("PDH") and Synchronous Digital Hierarchy ("SDH") equipment situated at a third party site ("Equipment").

72. The Dominant Provider may reject a request by a Third Party for re-use of PDH Equipment if such re-use would be incompatible with its network. Any such rejection by the Dominant Provider shall be made within 10 working days of a request by the Third Party and fully justified in writing to the requesting Third Party at the same time as the request is rejected.

Other Circuits

73. Unless Ofcom otherwise agrees, the Dominant Provider shall, offer to provide Partial Private Circuit with no single point of failure, within a reasonable period of a Third Party's request.

74. The Dominant Provider shall offer to provide, within a reasonable period of a Third Party's written request, a Partial Private Circuit which is dual pathed and diversely routed from a third party customer's premises to a Third Party's single Point of Connection.

RBS Backhaul

75. The Dominant Provider shall offer to provide to a Third Party, within a reasonable period of the Third Party's written request, transparent transmission capacity at all bandwidths up to and including a bandwidth capacity of two megabits per second between a radio base station and a Point of Connection with a Third Party's electronic communications network connected to the nearest appropriate digital cross connection node.

General

76. The Dominant Provider shall implement this Direction within 10 working days of its publication.

77. This Direction shall take effect on the day it is published.

A handwritten signature in black ink that reads "Gareth Davies". The signature is written in a cursive, slightly slanted style.

Gareth Davies
Competition Policy Director, Ofcom

**A person duly authorised in accordance with paragraph 18 of the Schedule to the
Office of Communications Act 2002**

8 December 2008

Schedule 12

Direction under section 49 of the Communications Act 2003 and SMP Services Condition GG1 imposed on British Telecommunications plc ('BT') as a result of the market power determinations made by the Office of Communications ('Ofcom') that BT has significant market power in the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second for the UK (excluding the Hull Area and the Central and East London Area)

WHEREAS:

- (A) As a result of a market analysis carried out by Ofcom, it determined on 8 December 2008, in accordance with sections 48 (1) and 80 of the Act, that the Dominant Provider has significant market power in the markets for the provision of wholesale traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second for the UK (excluding the Hull Area and the Central and East London Area);
- (B) In accordance with section 79 of the Act Ofcom set SMP Service Condition GG1 which imposes various obligations on the Dominant Provider, *inter alia*, the obligation to comply with any Direction Ofcom may from time to time make under this Condition;
- (C) This Direction concerns matters to which Condition GG1 relates;
- (D) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that, in accordance with section 49(2) of the Act, this Direction is:
 - (i) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
 - (ii) not such as to discriminate unduly against particular persons or against a particular description of persons;
 - (iii) proportionate to what it is intended to achieve; and
 - (iv) in relation to what it is intended to achieve, transparent;
- (E) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that it has acted in accordance with the relevant duties set out in sections 3 and 4 of the Act;
- (F) Ofcom has on 17 January 2008 published a notification of the proposed Direction in accordance with section 49 of the Act;
- (G) By virtue of section 49(9) of the Act, Ofcom may give effect to any proposals to give the Direction with or without modification, where
 - (i) it has considered every representation about the proposals duly made to OFCOM, within the time period specified in the Consultation Notification; and
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State; and
- (H) OFCOM received responses to the proposed Direction and has considered every such representation duly made to it in respect of the proposals; and the Secretary of State has

not notified OFCOM of any international obligation of the United Kingdom for this purpose;

NOW, therefore, pursuant to Condition GG1 Ofcom makes the following Direction:

Definitions

For the purpose of interpreting this Direction the following definitions shall apply:

“Act” means the Communications Act 2003;

“Central and East London Area” (‘CELA’) means the area in London consisting of the postal sectors set out in the Appendix to the Notification contained in Annex 8 to Ofcom’s explanatory statement published on 8 December 2008.

“Dominant Provider” means British Telecommunications plc (‘BT’), whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by Section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“Hull Area” means the area defined as the ‘Licensed Area’ in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Point of Connection” means a point at which the Dominant Provider’s Electronic Communications Network and another person’s Electronic Communications Network are connected;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network.

For the purpose of this Direction the following terms shall have the meaning as set out in the Dominant Provider’s Standard PPC Handover Agreement, as at the date of publication of this Direction, but with the necessary changes in order to ensure compliance with the Direction:

- Advance Capacity Order
- Advance Order Commitment
- BT Retail Private Circuit
- BT Serving Node
- Capacity Order
- Capacity Profile
- Customer Sited Handover (“CSH”)
- Forecast Profile

- In-Span Handover (“ISH”)
- Re-Designation
- Qualifying BT Retail Private Circuit

The following definitions shall also apply for the purpose of this Direction:

Term	Definition
Acceptance of Terms	Date on which a Third Party confirms acceptance of delivery conditions and is committed to the order.
Civil Works	Works that necessitate the digging up of a street for the installation of ducts.
Committed Delivery Date	The date confirmed by the Dominant Provider as the delivery date.
Firm Offer Confirmation (“FOC”)	Confirmation by the Dominant Provider in writing (by fax or e-mail) to a Third Party of the delivery conditions including price and Committed Delivery Date, after acknowledging receipt of an order for a Partial Private Circuit or Network Infrastructure from a Third Party.
FOC Acceptance Interval	The number of working days from the FOC Date until the Acceptance of Terms.
FOC Date	The date on which the Dominant Provider makes a Firm Offer Confirmation.
FOC Receipt Interval	The number of working days from the Order Request Date until the FOC Date.
Installation Date	Date of installation of a Partial Private Circuit or Network Infrastructure.
Network Infrastructure	The categories of products listed in the table contained in paragraph 51 of this Direction.
Order Request Date	Date on which a Third Party dispatches a valid Partial Private Circuit order, or Network Infrastructure order, to the Dominant Provider.
Partial Private Circuit (“PPC”)	A circuit provided pursuant to the PPC Contract and in accordance with the Directions.

PPC Contract	The Dominant Provider's Standard PPC Handover Agreement as at the date of publication of this Direction.
Provisioning Interval	The number of working days from the Order Request Date until the Installation Date.
Requisite Period	The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in paragraphs 41 and 51 of this Direction.
Reduced Requisite Period	The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in paragraphs 44 and 54 of this Direction.
Subsequent Partial Private Circuit	A Partial Private Circuit which can be delivered on dedicated pre-provided Network Infrastructure where spare capacity exists.

Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them.

The Interpretation Act 1978 shall apply as if this Direction was an Act of Parliament.

Headings and titles shall be disregarded.

The Dominant Provider shall provide Partial Private Circuits and shall do so in accordance with this Direction.

Migration

1. The 12 month contractual minimum term placed upon a Third Party, for the provision of a Partial Private Circuit which has been migrated pursuant to the PPC Contract, shall be measured from the date that the original BT Retail Private Circuit was brought into service.
2. The Dominant Provider shall not impose any deadline before which a Third Party must inform the Dominant Provider that it requires a BT Retail Private Circuit to be migrated to an equivalent Partial Private Circuit status under the PPC Contract.
3. The Dominant Provider shall allow a BT Retail Private Circuit, which fell within paragraph 1.3 of the Phase 1 PPC Direction published on 14 June 2002, to be considered under the PPC Contract as a Qualifying BT Retail Private Circuit.
4. A circuit deemed to be a Qualifying BT Retail Private Circuit under paragraphs 20 or 21 of the Phase 2 PPC Direction published on 23 December 2002 shall continue to be a Qualifying BT Retail Private Circuit.
5. Where a Third Party was not previously eligible to migrate a BT Retail Private Circuit to a Qualifying BT Retail Private Circuit, but subsequently becomes eligible to do so, the Dominant Provider shall, for 60 working days following the date on which the Third Party's circuits become eligible for migration, allow migration without the Third Party incurring any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits.

6. Where, at the date of publication of this Direction, the Dominant Provider offers a BT Retail Private Circuit product and does not offer an equivalent Partial Private Circuit product, but subsequently offers to provide an equivalent Partial Private Circuit product, it shall allow a Third Party to migrate to the equivalent Partial Private Circuit product without it incurring any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits, for a period of 60 working days following the date on which the equivalent Partial Private Circuit product is first offered by the Dominant Provider.

7. Where the Dominant Provider has taken, or will take, longer than five working days from receiving a request from a Third Party to migrate a Qualifying BT Retail Private Circuit to a Partial Private Circuit, it shall give to the Third Party a refund as set out in paragraphs 8 and 9 of this Direction.

8. Where paragraph 7 of this Direction applies, the Dominant Provider shall refund to the Third Party a sum of money equal to the difference between:

- the charge levied by the Dominant Provider for the BT Retail Private Circuit to which the request for migration relates; and
- the charge levied by the Dominant Provider for the Partial Private Circuit to which the request for migration relates.

9. The refund set out in paragraph 8 of this Direction shall cover the period from the date the Dominant Provider receives the request to migrate until the date the Dominant Provider completes the migration.

10. The Dominant Provider shall, upon a Third Party's written request, provide to the Third Party a map of its network within the United Kingdom which clearly illustrates and labels the geographic location of each Dominant Provider tier 1, tier 1.5, tier 2, and tier 3 nodes.

Forecasts

11. The Dominant Provider shall only require a Third Party to provide a profile of future Partial Private Circuit capacity ordering intentions over a 12 month period, on a national aggregate basis for groupings of bandwidths no narrower than the following:

- Above 8 Mbit/s through to 45 Mbit/s.

12. The Dominant Provider shall allow a Third Party to set its Advance Capacity Order and Advance Order Commitment without any penalty by up to, 10% (by volume) below, or 20% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile for the period covered by the Advance Capacity Order or Advance Order Commitment.

13. The Dominant Provider shall allow a Third Party to revise periods covered by its previously stated Capacity Profile and Forecast Profile without any penalty by up to, 30% (by volume) below, or 30% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile, provided that paragraph 12 of this Direction does not apply.

14. In calculating any increase to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded up to the nearest integer.

15. In calculating any decrease to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded down to the nearest integer.

16. Where a Third Party places a Capacity Order at a Point of Connection for the period corresponding to that of the Advance Capacity Order, which total less than its Advance Capacity Order for the Point of Connection, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}2,490$$

Where B is the total capacity provision by number of VC4-equivalent units specified in the relevant Advance Capacity Order in respect of each Point of Connection; and

Where C is the number of VC4-equivalents ordered during the period to which the relevant Advance Capacity Order relates in respect of each Point of Connection, but does not include cancellations of Capacity Orders made during or after the relevant Advanced Capacity Order period, but does include any Capacity Order cancelled as a result of the inability of the Dominant Provider to secure consents for CSH links.

17. [paragraph not used]

18. Where a Third Party places orders for Partial Private Circuits from above 8 Mbit/s through to 45Mbit/s for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for Partial Private Circuits from above 8 Mbit/s through to 45 Mbit/s, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}143$$

Where B is the total Advance Order Commitment for Private Partial Circuits from above 8 Mbit through to 45 Mbit/s; and

Where C is the number of Partial Private Circuits from above 8 Mbit/s through to 45 Mbit/s ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of Dominant Provider to secure consents for Partial Private Circuits.

19. [Paragraph not used].

20. In calculating (80% of B) in paragraphs 16 to 18 inclusive of this Direction the outcome shall, if not an integer, be rounded down to the nearest integer.

Service level agreements (SLAs)

General

21. The Dominant Provider shall set a Committed Delivery Date for each Partial Private Circuit or Network Infrastructure ordered from it by a Third Party and shall be required to provide reasons to justify a Committed Delivery Date which is set beyond the the relevant

Requisite Period (RP) and that any extension of the Committed Delivery Date beyond the the relevant Requisite Period (RP) shall be made subject to the consent of the Third Party concerned whose consent shall not be unreasonably withheld.

22. For each Partial Private Circuit or Network Infrastructure ordered from the Dominant Provider by a Third Party, the Dominant Provider shall provide to a Third Party Firm Offer Confirmation in the manner set out in the definition section of this Direction.

23. The time scales and levels of fixed individual compensation payments to be payable under the service level agreement shall be those set out in paragraph 34 of this Direction, unless otherwise agreed between the Dominant Provider and a Third Party, or except to the extent that Ofcom otherwise consents.

24. Unless otherwise agreed between the Dominant Provider and a Third Party, any fixed individual compensation payment, or reimbursement pursuant to paragraph 28 of this Direction, payable by the Dominant Provider to a Third Party pursuant to the Directions shall be offset by the Dominant Provider against the money owed to it by the Third Party, on a quarterly basis. The Dominant Provider shall keep complete and accurate records of the amounts it has offset in accordance with this paragraph. Such records shall be made available by the Dominant Provider following a request by a Third Party.

25. The Dominant Provider shall not be liable to pay fixed individual compensation payments pursuant to the Directions for periods of delay which arise due to circumstances beyond its reasonable control. The Dominant Provider shall notify a Third Party as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the Dominant Provider. Major construction works shall not be considered circumstances beyond the Dominant Provider's reasonable control.

26. The Dominant Provider shall ensure that any time limits set out in this Direction shall not apply to a Third Party to the extent that periods of delay arise due to circumstances beyond its reasonable control. The Third Party shall notify the Dominant Provider as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the relevant Third Party.

27. The Dominant Provider shall, at the reasonable request of a Third Party, postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure if such postponement is technically and organisationally reasonable. In agreeing to such a postponement the Dominant Provider shall only charge for reasonable additional expenses it has directly incurred as a result of the postponement.

28. The Dominant Provider shall only postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure with the written agreement of the Third Party. The Dominant Provider shall inform the Third Party as soon as reasonably possible of any proposed postponement of the Committed Delivery Date. Where such a postponement takes place the Dominant Provider shall reimburse the Third Party for any reasonable additional cost incurred by the Third Party as a direct result of the postponement.

29. The FOC Receipt Interval shall be a maximum of eight working days for Partial Private Circuits of above 8 Mbit/s and up to and including 45 Mbit/s and Network Infrastructure regardless of how many Partial Private Circuits are, or the amount of Network Infrastructure is, ordered at a particular site.

30. The Dominant Provider shall ensure that the FOC Acceptance Interval is a maximum of two working days for Partial Private Circuits of above 8 Mbit/s and up to and including 45 Mbit/s and Network Infrastructure. Where a Third Party has not informed the Dominant Provider of its Acceptance of Terms or rejection of the order within five working days of the FOC Date, the Dominant Provider may cancel the Third Party's order.

31. The Dominant Provider shall keep complete and accurate records of the ordering, provision and repair of Partial Private Circuits and Network Infrastructure it provides to a Third Party.

32. Where any Partial Private Circuit or Network Infrastructure which is ordered by a Third Party is in excess of 110% (by volume), rounded up to the nearest integer where necessary, of its Advance Order Commitment or Advance Capacity Order, the applicable Requisite Period set out in the tables in paragraphs 41 and 51 of this Direction shall be extended by 50% and rounded up to the nearest working day, where necessary, for the purposes of calculating fixed individual compensation payments.

Unliquidated damages

33. Nothing in the PPC Contract, as amended by the Direction, shall prevent a Third Party from bringing a claim against the Dominant Provider for unliquidated damages over and above the fixed individual compensation payments set out in the Direction.

Service level guarantees (SLGs)

Modifications to the PPC Contract

34. The Dominant Provider shall amend the terms and conditions which govern the supply of Partial Private Circuits set out in the PPC Contract to provide the following:

Compensation per event and value of compensation

a) The Dominant Provider shall pay the Third Party compensation for each day or part day of delay in delivery of service beyond the Committed Delivery Date or the Third Party's Requirement Date (whichever is later).

b) The Dominant Provider shall pay the Third Party compensation for each and every fault which has not been restored:

- for Regular Care customers, in the first two days on a per day basis thereafter; and
- for Enhanced Care customers, in the first five hours on a per hour basis thereafter.

c) The compensation payable in event of the each late provision of the required Partial Private Circuit or Network Infrastructure service shall be set at 100% of one month's line rental (or Network Infrastructure rental) for every day or part day of delay beyond the Committed Delivery Date or Requirement Date (whichever is later), up to a maximum of 60 days.

d) The compensation payable in the event of each late fault repair in relation to a Partial Private Circuit or Network Infrastructure shall be:

- for Regular Care customers, 100% of one month's line rental for every fault which has not been restored in the first two days for every day thereafter until service is restored, up to a maximum of 30 days; and

- for Enhanced Care customers, 15% of one month's line rental for every fault which has not been restored in the first five hours for every hour thereafter until service is restored, up to a maximum of 200 hours.

e) Any limits on compensation payable as a result of a failure to satisfy the service guarantees shall be removed other than those set out in (c) and (d) above.

Additional losses

f) Any compensation payable under the contract shall be without prejudice to any right of either party to claim for additional loss.

Proactive payments

g) The Dominant Provider shall monitor its performance against the service guarantees for fault repair and provision and compensate Third Parties proactively should it fail to satisfy the service guarantees. Compensation payments shall be made as soon as possible after the event and not later than the billing cycle following the billing cycle after the event unless not practicable. For the avoidance of doubt, compensation shall be payable without the need for a Third Party to make a claim.

35. The terms and conditions amended as set out in paragraph 34 above shall take effect from the 90th day after the publication of the Final Statement.

Partial Private Circuits

Quick quote and very high bandwidth quote on line

36. The Dominant Provider shall provide to a Third Party, upon written request, the necessary wholesale network and pricing information to enable the Third Party to obtain the same information for Partial Private Circuits that is available to the Dominant Provider's retail arm, for its "Quick Quote" quote facilities.

Concurrency of Partial Private Circuit and ISH link and CSH link delivery times

37. Where a Third Party has ordered a Partial Private Circuit, and the operation of the circuit requires the provision of an ISH link or CSH link, the Dominant Provider shall ensure that the delivery dates of the Partial Private Circuit and the CSH link or ISH link are the same.

38. [paragraph not used]

39. [paragraph not used]

Time scales for fixed individual compensation

40. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 41 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

41. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider

shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Bandwidth of Partial Private Circuit	Requisite Period
34 Mbit/s to 45 Mbit/s	57 working days

Third Party's ability to cancel order

42. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 41 of this Direction, a Third Party shall be allowed to cancel its order for a Partial Private Circuit after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 41 of this Direction. The Requisite Periods in the table in paragraph 41 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of a Partial Private Circuit which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 41 of this Direction	Cancellation Threshold
57 working days	25 working days

43. Where a Third Party cancels a Partial Private Circuit pursuant to paragraph 42 of this Direction, the Dominant Provider shall not charge the Third Party for the circuit and shall not charge for cancelling the circuit. The Dominant Provider shall also be liable to pay the Third Party any fixed individual compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite Periods for Partial Private Circuits

44. The Dominant Provider shall ensure that for at least 70% (by volume) of Partial Private Circuits of a particular bandwidth delivered by the Dominant Party to a Third Party within a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Bandwidth of Partial Private Circuit	Reduced Requisite Period
34 Mbit/s to 45 Mbit/s	45 working days

45. In calculating the 70% (by volume) of Partial Private Circuits to which paragraph 44 of this Direction applies the following shall not be included:

- Partial Private Circuits which exceed 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment.

46. The Reduced Requisite Periods set out in the table in paragraph 44 of this Direction apply only if, in the previous three month reporting period (such period not to be calculated on a rolling basis), a Third Party has ordered from the Dominant Provider at least ten Partial Private Circuits of the same bandwidth where such Partial Private Circuits are 2 Mbit/s or less.

47. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment has been exceeded, the calculation shall be at a national level for each individual Partial Private Circuit bandwidth category and applied in the order in which the Partial Private Circuits were ordered by the Third Party.

Multiple orders

48. Where the Dominant Provider receives an order for more than 10 Partial Private Circuits at one site from a Third Party, the relevant Requisite Period applicable to determine whether the Dominant Provider shall pay fixed individual compensation as set out in paragraphs 40 and 41 of this Direction, shall be the relevant Requisite Period set out in the table in paragraph 41 of this Direction increased by a maximum of 50%. The Dominant Provider shall inform the Third Party of the revised time scales as soon as reasonably practicable.

Availability of service

49. When total loss of service (i.e. total loss of service for one minute or longer) occurs three or more times, within a 12 month period, to a Partial Private Circuit, the Third Party shall not be liable to the Dominant Provider for the monthly rental in any subsequent month where total loss of failure occurs to the Partial Private Circuit, until such time as 12 months have passed and the Partial Private Circuit has not suffered total loss of service. Occurrences of total loss of service which result in the Dominant Provider being liable to pay fixed individual compensation pursuant to paragraphs 60, 61 and 63 of this Direction, shall not be considered as an occurrence of a total loss of service for the purposes of this paragraph.

Network Infrastructure

Time scales for fixed individual compensation

50. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 51 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

51. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Network Infrastructure	Requisite Period (where the Dominant Provider needs to carry out Civil Works)	Requisite Period (where the Dominant Provider does not need to carry out Civil Works)
ISH links	110 working days	85 working days
CSH links	110 working days	85 working days
ISH links – provision of new multiplexor on an		

existing Point of Connection	Not applicable	60 working days
ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	60 working Days
CSH links - provision of new multiplexor on existing Point of Connection	Not applicable	60 working Days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	25 working Days

Third Party's ability to cancel order

52. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 51 of this Direction, a Third Party shall be allowed to cancel its order for Network Infrastructure after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 51 of this Direction. The Requisite periods in the table in paragraph 51 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of Network Infrastructure which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 51 of this Direction	Cancellation Threshold
21 to 40 working days	20 working days
41 to 60 working days	25 working days
61 to 90 working days	30 working days
Over 90 working days	40 working days

53. Where a Third Party cancels Network Infrastructure pursuant to paragraph 52 of this Direction, the Dominant Provider shall not charge the Third Party for the Network Infrastructure and shall not charge for cancelling the Network Infrastructure. The Dominant Provider shall also be liable to pay the Third Party any fixed compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite periods for Network Infrastructure

54. The Dominant Provider shall ensure that for at least 70% (by volume) of the total VC4-equivalents of Network Infrastructure delivered by it to a Third Party during a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Network Infrastructure	Reduced Requisite Period (where the Dominant Provider needs to carry out	Reduced Requisite Period where the Dominant Provider does not need to
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	Civil Works)	carry out Civil Works)
ISH links	75 working days	60 working days
CSH links	75 working days	60 working days
ISH links - provision of new multiplexor on an existing Point of Connection	Not applicable	40 working days
ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	40 working days
CSH links - provision of new multiplexor on existing Point of Connection	Not applicable	40 working days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	20 working days

55. In calculating the 70% (by volume) of the total VC4-equivalents of Network Infrastructure to which paragraph 54 of this Direction applies the following shall not be included:

- Network Infrastructure which exceeds 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order.

56. The Reduced Requisite Periods set out in the table in paragraph 54 of this Direction only apply if, in the previous three month reporting period (such period not to be calculated on a rolling basis) a Third Party has ordered from the Dominant Provider at least 2 VC4-equivalents of Network Infrastructure. For the purposes of this paragraph the first reporting period of three months shall be the first such reporting period falling after 30 working days following the date of publication of this Direction.

57. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order has been exceeded, the calculation shall be made using VC4-equivalents at each Point of Connection applied in the order in which the Network Infrastructure was ordered by the Third Party.

Repair of Partial Private Circuits and Network Infrastructure

58. Where the Dominant Provider offers to a Third Party Regular Care and Enhanced Care for Partial Private Circuits and Network Infrastructure it shall do so at a cost orientated price and as set out in the table below:

	Operational hours	Repair/response time	Extras

Regular Care	Normal working hours	Response within one working day of receipt of a fault report by a Third Party. Repair within two working days of receipt of a fault report by a Third Party.	If a fault is not remedied within two working days of receipt of a fault report by a Third Party, the Dominant Provider shall call the Third Party to report progress being made to remedy the fault.
Enhanced Care	24 hours per day, 7 days per week (including public and bank holidays).	Response within four hours of receipt of a fault report from a Third Party. Repair within five hours of receipt of a fault report by a Third Party.	If a fault is not remedied within five hours of receipt of a fault report by a Third Party, the Dominant Provider shall contact the Third Party to report progress being made to remedy the fault.

59. Receipt by the Dominant Provider from a Third Party of a report of a fault concerning a Partial Private Circuit or Network Infrastructure, shall be acknowledged by the Dominant Provider to the Third Party within one hour.

60. Where the Dominant Provider fails to repair a Partial Private Circuit within the time limits set out in the table in paragraph 58 of this Direction it shall pay to the Third Party a fixed individual compensation payment as set out in paragraphs 61 to 65 inclusive of this Direction in respect of the period commencing on the expiry of the applicable repair time set out in the table in paragraph 58 and expiring at the time the Partial Private Circuit or Network Infrastructure is repaired.

61. Where the Third Party has ordered the Dominant Provider's Regular Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

62. Where the Third Party has ordered the Dominant Provider's Regular Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

63. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

64. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

65. The Dominant Provider shall not be liable to pay fixed individual compensation pursuant to paragraphs 62 and 64 of this Direction where it is also liable for fixed individual compensation pursuant to paragraphs 61 and 63 of this Direction where the Partial Private Circuit is being provided using the Network Infrastructure which is being repaired.

66. The Dominant Provider shall attend, and invite Third Parties to regular meetings to review the level of service provided by it in relation to Partial Private Circuits and related Network Infrastructure.

Change of speed or interface

67. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request, the ability to alter the speed or interface of a Partial Private Circuit.

68. The Dominant Provider shall ensure that it provides to a Third Party a Partial Private Circuit variant for the services to which paragraph 67 of this Direction applies, which are equivalent to the services it currently provides on a retail basis for retail leased lines.

STM-1, ISH and CSH handover

69. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request for a Synchronous Transfer Mode-1 ("STM-1"), an interface using an ISH link or CSH link; and handover pursuant to paragraph 70 of this Direction. Such link or handover shall be provided by way of network connecting apparatus capable of providing no more than the STM-1 capacity ordered by the Third Party.

70. The Dominant Provider shall within a reasonable period of a Third Party's written request, handover in a footway jointing chamber for Partial Private Circuits at a reasonable point nominated by the Third Party. The footway jointing chamber shall be located in the same Dominant Provider local serving exchange area as the Dominant Provider Serving Node to which the Partial Private Circuits being handed over are connected.

Equipment re-use

71. Paragraph 72 of this Direction shall only apply to the re-use of Plesiochronous Digital Hierarchy ("PDH") and Synchronous Digital Hierarchy ("SDH") equipment situated at a third party site ("Equipment").

72. The Dominant Provider may reject a request by a Third Party for re-use of PDH Equipment if such re-use would be incompatible with its network. Any such rejection by the Dominant Provider shall be made within 10 working days of a request by the Third Party and fully justified in writing to the requesting Third Party at the same time as the request is rejected.

Other Circuits

73. Unless Ofcom otherwise agrees, the Dominant Provider shall, offer to provide Partial Private Circuit with no single point of failure, within a reasonable period of a Third Party's request.

74. The Dominant Provider shall offer to provide, within a reasonable period of a Third Party's written request, a Partial Private Circuit which is dual pathed and diversely routed from a third party customer's premises to a Third Party's single Point of Connection.

General

75. The Dominant Provider shall implement this Direction within 10 working days of its publication.

76. This Direction shall take effect on the day it is published.

A handwritten signature in black ink that reads "Gareth Davies". The signature is written in a cursive style with a large initial 'G'.

Gareth Davies
Competition Policy Director, Ofcom

**A person duly authorised in accordance with paragraph 18 of the Schedule to the
Office of Communications Act 2002**

8 December 2008

Schedule 13

Direction under section 49 of the Communications Act 2003 and SMP Services Condition GH1 imposed on British Telecommunications plc ('BT') as a result of the market power determinations made by the Office of Communications ('Ofcom') that BT has significant market power in the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second for the UK (excluding the Hull Area and the Central and East London Area)

WHEREAS:

- (A) As a result of a market analysis carried out by Ofcom, it determined on 8 December 2008, in accordance with sections 48 (1) and 80 of the Act, that the Dominant Provider has significant market power in the markets for the provision of wholesale traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second for the UK (excluding the Hull Area and the Central and East London Area);
- (B) In accordance with section 79 of the Act Ofcom set SMP Service Condition GH1 which imposes various obligations on the Dominant Provider, *inter alia*, the obligation to comply with any Direction Ofcom may from time to time make under this Condition;
- (C) This Direction concerns matters to which Condition GH1 relates;
- (D) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that, in accordance with section 49(2) of the Act, this Direction is:
 - (i) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
 - (ii) not such as to discriminate unduly against particular persons or against a particular description of persons;
 - (iii) proportionate to what it is intended to achieve; and
 - (iv) in relation to what it is intended to achieve, transparent;
- (E) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that it has acted in accordance with the relevant duties set out in sections 3 and 4 of the Act;
- (F) Ofcom has on 10 July 2008 published a notification of the proposed Direction in accordance with section 49 of the Act;
- (G) By virtue of section 49(9) of the Act, Ofcom may give effect to any proposals to give the Direction with or without modification, where
 - (i) it has considered every representation about the proposals duly made to OFCOM, within the time period specified in the Consultation Notification; and
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State; and
- (H) OFCOM received responses to the proposed Direction and has considered every such representation duly made to it in respect of the proposals; and the Secretary of State has

not notified OFCOM of any international obligation of the United Kingdom for this purpose;

NOW, therefore, pursuant to Condition GH1 Ofcom makes the following Direction:

Definitions

For the purpose of interpreting this Direction the following definitions shall apply:

“Act” means the Communications Act 2003;

“Central and East London Area” (‘CELA’) means the area in London consisting of the postal sectors set out in the Appendix to the Notification contained in Annex 8 to Ofcom’s explanatory statement published on 8 December 2008.

“Dominant Provider” means British Telecommunications plc (‘BT’), whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by Section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“Hull Area” means the area defined as the ‘Licensed Area’ in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Point of Connection” means a point at which the Dominant Provider’s Electronic Communications Network and another person’s Electronic Communications Network are connected;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network.

For the purpose of this Direction the following terms shall have the meaning as set out in the Dominant Provider’s Standard PPC Handover Agreement, as at the date of publication of this Direction, but with the necessary changes in order to ensure compliance with the Direction:

- Advance Capacity Order
- Advance Order Commitment
- BT Retail Private Circuit
- BT Serving Node
- Capacity Order
- Capacity Profile
- Customer Sited Handover (“CSH”)
- Forecast Profile

- In-Span Handover (“ISH”)
- Re-Designation
- Qualifying BT Retail Private Circuit

The following definitions shall also apply for the purpose of this Direction:

Term	Definition
Acceptance of Terms	Date on which a Third Party confirms acceptance of delivery conditions and is committed to the order.
Civil Works	Works that necessitate the digging up of a street for the installation of ducts.
Committed Delivery Date	The date confirmed by the Dominant Provider as the delivery date.
Firm Offer Confirmation (“FOC”)	Confirmation by the Dominant Provider in writing (by fax or e-mail) to a Third Party of the delivery conditions including price and Committed Delivery Date, after acknowledging receipt of an order for a Partial Private Circuit or Network Infrastructure from a Third Party.
FOC Acceptance Interval	The number of working days from the FOC Date until the Acceptance of Terms.
FOC Date	The date on which the Dominant Provider makes a Firm Offer Confirmation.
FOC Receipt Interval	The number of working days from the Order Request Date until the FOC Date.
Installation Date	Date of installation of a Partial Private Circuit or Network Infrastructure.
Network Infrastructure	The categories of products listed in the table contained in paragraph 51 of this Direction.
Order Request Date	Date on which a Third Party dispatches a valid Partial Private Circuit order, or Network Infrastructure order, to the Dominant Provider.
Partial Private Circuit (“PPC”)	A circuit provided pursuant to the PPC Contract and in accordance with the Directions.
PPC Contract	The Dominant Provider's Standard PPC

	Handover Agreement as at the date of publication of this Direction.
Provisioning Interval	The number of working days from the Order Request Date until the Installation Date.
Requisite Period	The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in paragraphs 41 and 51 of this Direction.
Reduced Requisite Period	The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in paragraphs 44 and 54 of this Direction.
Subsequent Partial Private Circuit	A Partial Private Circuit which can be delivered on dedicated pre-provided Network Infrastructure where spare capacity exists.

Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them.

The Interpretation Act 1978 shall apply as if this Direction was an Act of Parliament.

Headings and titles shall be disregarded.

The Dominant Provider shall provide Partial Private Circuits and shall do so in accordance with this Direction.

Migration

1. The 12 month contractual minimum term placed upon a Third Party, for the provision of a Partial Private Circuit which has been migrated pursuant to the PPC Contract, shall be measured from the date that the original BT Retail Private Circuit was brought into service.
2. The Dominant Provider shall not impose any deadline before which a Third Party must inform the Dominant Provider that it requires a BT Retail Private Circuit to be migrated to an equivalent Partial Private Circuit status under the PPC Contract.
3. The Dominant Provider shall allow a BT Retail Private Circuit, which fell within paragraph 1.3 of the Phase 1 PPC Direction published on 14 June 2002, to be considered under the PPC Contract as a Qualifying BT Retail Private Circuit.
4. A circuit deemed to be a Qualifying BT Retail Private Circuit under paragraphs 20 or 21 of the Phase 2 PPC Direction published on 23 December 2002 shall continue to be a Qualifying BT Retail Private Circuit.
5. Where a Third Party was not previously eligible to migrate a BT Retail Private Circuit to a Qualifying BT Retail Private Circuit, but subsequently becomes eligible to do so, the Dominant Provider shall, for 60 working days following the date on which the Third Party's circuits become eligible for migration, allow migration without the Third Party incurring any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits.

6. Where, at the date of publication of this Direction, the Dominant Provider offers a BT Retail Private Circuit product and does not offer an equivalent Partial Private Circuit product, but subsequently offers to provide an equivalent Partial Private Circuit product, it shall allow a Third Party to migrate to the equivalent Partial Private Circuit product without it incurring any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits, for a period of 60 working days following the date on which the equivalent Partial Private Circuit product is first offered by the Dominant Provider.

7. Where the Dominant Provider has taken, or will take, longer than five working days from receiving a request from a Third Party to migrate a Qualifying BT Retail Private Circuit to a Partial Private Circuit, it shall give to the Third Party a refund as set out in paragraphs 8 and 9 of this Direction.

8. Where paragraph 7 of this Direction applies, the Dominant Provider shall refund to the Third Party a sum of money equal to the difference between:

- the charge levied by the Dominant Provider for the BT Retail Private Circuit to which the request for migration relates; and
- the charge levied by the Dominant Provider for the Partial Private Circuit to which the request for migration relates.

9. The refund set out in paragraph 8 of this Direction shall cover the period from the date the Dominant Provider receives the request to migrate until the date the Dominant Provider completes the migration.

10. The Dominant Provider shall, upon a Third Party's written request, provide to the Third Party a map of its network within the United Kingdom which clearly illustrates and labels the geographic location of each Dominant Provider tier 1, tier 1.5, tier 2, and tier 3 nodes.

Forecasts

11. The Dominant Provider shall only require a Third Party to provide a profile of future Partial Private Circuit capacity ordering intentions over a 12 month period, on a national aggregate basis for groupings of bandwidths no narrower than the following:

- Above 45 Mbit/s through to 155 Mbit/s.

12. The Dominant Provider shall allow a Third Party to set its Advance Capacity Order and Advance Order Commitment without any penalty by up to, 10% (by volume) below, or 20% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile for the period covered by the Advance Capacity Order or Advance Order Commitment.

13. The Dominant Provider shall allow a Third Party to revise periods covered by its previously stated Capacity Profile and Forecast Profile without any penalty by up to, 30% (by volume) below, or 30% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile, provided that paragraph 12 of this Direction does not apply.

14. In calculating any increase to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded up to the nearest integer.

15. In calculating any decrease to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded down to the nearest integer.

16. Where a Third Party places a Capacity Order at a Point of Connection for the period corresponding to that of the Advance Capacity Order, which total less than its Advance Capacity Order for the Point of Connection, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}2,490$$

Where B is the total capacity provision by number of VC4-equivalent units specified in the relevant Advance Capacity Order in respect of each Point of Connection; and

Where C is the number of VC4-equivalents ordered during the period to which the relevant Advance Capacity Order relates in respect of each Point of Connection, but does not include cancellations of Capacity Orders made during or after the relevant Advanced Capacity Order period, but does include any Capacity Order cancelled as a result of the inability of the Dominant Provider to secure consents for CSH links.

17. [paragraph not used]

18. Where a Third Party places orders for Partial Private Circuits of 155 Mbit/s for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for Partial Private Circuits for 155 Mbit, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}3,788$$

Where B is the total Advance Order Commitment for Private Partial Circuits of 155 Mbit/s; and

Where C is the number of Partial Private Circuits of 155 Mbit/s ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of Dominant Provider to secure consents for Partial Private Circuits.

19. [Paragraph not used].

20. In calculating (80% of B) in paragraphs 16 to 18 inclusive of this Direction the outcome shall, if not an integer, be rounded down to the nearest integer.

Service level agreements (SLAs)

General

21. The Dominant Provider shall set a Committed Delivery Date for each Partial Private Circuit or Network Infrastructure ordered from it by a Third Party and shall be required to provide reasons to justify a Committed Delivery Date which is set beyond the the relevant Requisite Period (RP) and that any extension of the Committed Delivery Date beyond the the relevant Requisite Period (RP) shall be made subject to the consent of the Third Party concerned whose consent shall not be unreasonably withheld.

22. For each Partial Private Circuit or Network Infrastructure ordered from the Dominant Provider by a Third Party, the Dominant Provider shall provide to a Third Party Firm Offer Confirmation in the manner set out in the definition section of this Direction.

23. The time scales and levels of fixed individual compensation payments to be payable under the service level agreement shall be those set out in paragraph 34 of this Direction, unless otherwise agreed between the Dominant Provider and a Third Party, or except to the extent that Ofcom otherwise consents.

24. Unless otherwise agreed between the Dominant Provider and a Third Party, any fixed individual compensation payment, or reimbursement pursuant to paragraph 28 of this Direction, payable by the Dominant Provider to a Third Party pursuant to the Directions shall be offset by the Dominant Provider against the money owed to it by the Third Party, on a quarterly basis. The Dominant Provider shall keep complete and accurate records of the amounts it has offset in accordance with this paragraph. Such records shall be made available by the Dominant Provider following a request by a Third Party.

25. The Dominant Provider shall not be liable to pay fixed individual compensation payments pursuant to the Directions for periods of delay which arise due to circumstances beyond its reasonable control. The Dominant Provider shall notify a Third Party as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the Dominant Provider. Major construction works shall not be considered circumstances beyond the Dominant Provider's reasonable control.

26. The Dominant Provider shall ensure that any time limits set out in this Direction shall not apply to a Third Party to the extent that periods of delay arise due to circumstances beyond its reasonable control. The Third Party shall notify the Dominant Provider as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the relevant Third Party.

27. The Dominant Provider shall, at the reasonable request of a Third Party, postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure if such postponement is technically and organisationally reasonable. In agreeing to such a postponement the Dominant Provider shall only charge for reasonable additional expenses it has directly incurred as a result of the postponement.

28. The Dominant Provider shall only postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure with the written agreement of the Third Party. The Dominant Provider shall inform the Third Party as soon as reasonably possible of any proposed postponement of the Committed Delivery Date. Where such a postponement takes place the Dominant Provider shall reimburse the Third Party for any reasonable additional cost incurred by the Third Party as a direct result of the postponement.

29. The FOC Receipt Interval shall be a maximum of eight working days for Partial Private Circuits of above 45 Mbit/s and up to and including 155 Mbit/s and Network Infrastructure regardless of how many Partial Private Circuits are, or the amount of Network Infrastructure is, ordered at a particular site.

30. The Dominant Provider shall ensure that the FOC Acceptance Interval is a maximum of two working days for Partial Private Circuits of above 45 Mbit/s and up to and including 155 Mbit/s and for Network Infrastructure. Where a Third Party has not informed the Dominant

Provider of its Acceptance of Terms or rejection of the order within five working days of the FOC Date, the Dominant Provider may cancel the Third Party's order.

31. The Dominant Provider shall keep complete and accurate records of the ordering, provision and repair of Partial Private Circuits and Network Infrastructure it provides to a Third Party.

32. Where any Partial Private Circuit or Network Infrastructure which is ordered by a Third Party is in excess of 110% (by volume), rounded up to the nearest integer where necessary, of its Advance Order Commitment or Advance Capacity Order, the applicable Requisite Period set out in the tables in paragraphs 41 and 51 of this Direction shall be extended by 50% and rounded up to the nearest working day, where necessary, for the purposes of calculating fixed individual compensation payments.

Unliquidated damages

33. Nothing in the PPC Contract, as amended by the Direction, shall prevent a Third Party from bringing a claim against the Dominant Provider for unliquidated damages over and above the fixed individual compensation payments set out in the Direction.

Service level guarantees (SLGs)

Modifications to the PPC Contract

34. The Dominant Provider shall amend the terms and conditions which govern the supply of Partial Private Circuits set out in the PPC Contract to provide the following:

Compensation per event and value of compensation

- a) The Dominant Provider shall pay the Third Party compensation for each day or part day of delay in delivery of service beyond the Committed Delivery Date or the Third Party's Requirement Date (whichever is later).
- b) The Dominant Provider shall pay the Third Party compensation for each and every fault which has not been restored:
 - for Regular Care customers, in the first two days on a per day basis thereafter; and
 - for Enhanced Care customers, in the first five hours on a per hour basis thereafter.
- c) The compensation payable in event of the each late provision of the required Partial Private Circuit or Network Infrastructure service shall be set at 100% of one month's line rental (or Network Infrastructure rental) for every day or part day of delay beyond the Committed Delivery Date or Requirement Date (whichever is later), up to a maximum of 60 days.
- d) The compensation payable in the event of each late fault repair in relation to a Partial Private Circuit or Network Infrastructure shall be:
 - for Regular Care customers, 100% of one month's line rental for every fault which has not been restored in the first two days for every day thereafter until service is restored, up to a maximum of 30 days; and
 - for Enhanced Care customers, 15% of one month's line rental for every fault which has not been restored in the first five hours for every hour thereafter until service is restored, up to a maximum of 200 hours.

e) Any limits on compensation payable as a result of a failure to satisfy the service guarantees shall be removed other than those set out in (c) and (d) above.

Additional losses

f) Any compensation payable under the contract shall be without prejudice to any right of either party to claim for additional loss.

Proactive payments

g) The Dominant Provider shall monitor its performance against the service guarantees for fault repair and provision and compensate Third Parties proactively should it fail to satisfy the service guarantees. Compensation payments shall be made as soon as possible after the event and not later than the billing cycle following the billing cycle after the event unless not practicable. For the avoidance of doubt, compensation shall be payable without the need for a Third Party to make a claim.

35. The terms and conditions amended as set out in paragraph 34 above shall take effect from the 90th day after the publication of the Final Statement.

Partial Private Circuits

Quick quote and very high bandwidth quote on line

36. The Dominant Provider shall provide to a Third Party, upon written request, the necessary wholesale network and pricing information to enable the Third Party to obtain the same information for Partial Private Circuits that is available to the Dominant Provider's retail arm, for its "Quick Quote" quote facilities.

Concurrency of Partial Private Circuit and ISH link and CSH link delivery times

37. Where a Third Party has ordered a Partial Private Circuit, and the operation of the circuit requires the provision of an ISH link or CSH link, the Dominant Provider shall ensure that the delivery dates of the Partial Private Circuit and the CSH link or ISH link are the same.

Expedited orders

38. [paragraph not used]

39. [paragraph not used]

Time scales for fixed individual compensation

40. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 41 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

41. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Bandwidth of Partial Private Circuit

Requisite Period

155 Mbit/s

57 working days

Third Party's ability to cancel order

42. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 41 of this Direction, a Third Party shall be allowed to cancel its order for a Partial Private Circuit after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 41 of this Direction. The Requisite Periods in the table in paragraph 41 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of a Partial Private Circuit which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 41 of this Direction	Cancellation Threshold
57 working days	25 working days

43. Where a Third Party cancels a Partial Private Circuit pursuant to paragraph 42 of this Direction, the Dominant Provider shall not charge the Third Party for the circuit and shall not charge for cancelling the circuit. The Dominant Provider shall also be liable to pay the Third Party any fixed individual compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite Periods for Partial Private Circuits

44. The Dominant Provider shall ensure that for at least 70% (by volume) of Partial Private Circuits of a particular bandwidth delivered by the Dominant Party to a Third Party within a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Bandwidth of Partial Private Circuit

Reduced Requisite Period

155 Mbit/s

45 working days

45. In calculating the 70% (by volume) of Partial Private Circuits to which paragraph 44 of this Direction applies the following shall not be included:

- Partial Private Circuits which exceed 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment.

46. The Reduced Requisite Periods set out in the table in paragraph 44 of this Direction apply only if, in the previous three month reporting period (such period not to be calculated on a rolling basis), a Third Party has ordered from the Dominant Provider at least ten Partial Private Circuits of the same bandwidth where such Partial Private Circuits are 2 Mbit/s or less.

47. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment has been exceeded, the calculation shall be at a national level for each individual Partial Private

Circuit bandwidth category and applied in the order in which the Partial Private Circuits were ordered by the Third Party.

Multiple orders

48. Where the Dominant Provider receives an order for more than 10 Partial Private Circuits at one site from a Third Party, the relevant Requisite Period applicable to determine whether the Dominant Provider shall pay fixed individual compensation as set out in paragraphs 40 and 41 of this Direction, shall be the relevant Requisite Period set out in the table in paragraph 41 of this Direction increased by a maximum of 50%. The Dominant Provider shall inform the Third Party of the revised time scales as soon as reasonably practicable.

Availability of service

49. When total loss of service (i.e. total loss of service for one minute or longer) occurs three or more times, within a 12 month period, to a Partial Private Circuit, the Third Party shall not be liable to the Dominant Provider for the monthly rental in any subsequent month where total loss of failure occurs to the Partial Private Circuit, until such time as 12 months have passed and the Partial Private Circuit has not suffered total loss of service. Occurrences of total loss of service which result in the Dominant Provider being liable to pay fixed individual compensation pursuant to paragraphs 60, 61 and 63 of this Direction, shall not be considered as an occurrence of a total loss of service for the purposes of this paragraph.

Network Infrastructure

Time scales for fixed individual compensation

50. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 51 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

51. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Network Infrastructure	Requisite Period (where the Dominant Provider needs to carry out Civil Works)	Requisite Period (where the Dominant Provider does not need to carry out Civil Works)
ISH links	110 working days	85 working days
CSH links	110 working days	85 working days
ISH links – provision of new multiplexor on an existing Point of Connection	Not applicable	60 working days

ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	60 working Days
CSH links - provision of new multiplexor on existing Point of Connection	Not applicable	60 working Days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	25 working Days

Third Party's ability to cancel order

52. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 51 of this Direction, a Third Party shall be allowed to cancel its order for Network Infrastructure after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 51 of this Direction. The Requisite periods in the table in paragraph 51 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of Network Infrastructure which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 51 of this Direction	Cancellation Threshold
21 to 40 working days	20 working days
41 to 60 working days	25 working days
61 to 90 working days	30 working days
Over 90 working days	40 working days

53. Where a Third Party cancels Network Infrastructure pursuant to paragraph 52 of this Direction, the Dominant Provider shall not charge the Third Party for the Network Infrastructure and shall not charge for cancelling the Network Infrastructure. The Dominant Provider shall also be liable to pay the Third Party any fixed compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite periods for Network Infrastructure

54. The Dominant Provider shall ensure that for at least 70% (by volume) of the total VC4-equivalents of Network Infrastructure delivered by it to a Third Party during a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Network Infrastructure	Reduced Requisite Period (where the Dominant Provider needs to carry out Civil Works)	Reduced Requisite Period where the Dominant Provider does not need to carry out Civil Works)
ISH links	75 working days	60 working days

CSH links	75 working days	60 working days
ISH links - provision of new multiplexor on an existing Point of Connection	Not applicable	40 working days
ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	40 working days
CSH links - provision of new multiplexor on existing Point of Connection	Not applicable	40 working days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	20 working days

55. In calculating the 70% (by volume) of the total VC4-equivalents of Network Infrastructure to which paragraph 54 of this Direction applies the following shall not be included:

- Network Infrastructure which exceeds 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order.

56. The Reduced Requisite Periods set out in the table in paragraph 54 of this Direction only apply if, in the previous three month reporting period (such period not to be calculated on a rolling basis) a Third Party has ordered from the Dominant Provider at least 2 VC4-equivalents of Network Infrastructure. For the purposes of this paragraph the first reporting period of three months shall be the first such reporting period falling after 30 working days following the date of publication of this Direction.

57. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order has been exceeded, the calculation shall be made using VC4-equivalents at each Point of Connection applied in the order in which the Network Infrastructure was ordered by the Third Party.

Repair of Partial Private Circuits and Network Infrastructure

58. Where the Dominant Provider offers to a Third Party Regular Care and Enhanced Care for Partial Private Circuits and Network Infrastructure it shall do so at a cost orientated price and as set out in the table below:

	Operational hours	Repair/response time	Extras
Regular Care	Normal working hours	Response within one working day of receipt of a fault	If a fault is not remedied within two working days of receipt of a fault report

		report by a Third Party. Repair within two working days of receipt of a fault report by a Third Party.	by a Third Party, the Dominant Provider shall call the Third Party to report progress being made to remedy the fault.
Enhanced Care	24 hours per day, 7 days per week (including public and bank holidays).	Response within four hours of receipt of a fault report from a Third Party. Repair within five hours of receipt of a fault report by a Third Party.	If a fault is not remedied within five hours of receipt of a fault report by a Third Party, the Dominant Provider shall contact the Third Party to report progress being made to remedy the fault.

59. Receipt by the Dominant Provider from a Third Party of a report of a fault concerning a Partial Private Circuit or Network Infrastructure, shall be acknowledged by the Dominant Provider to the Third Party within one hour.

60. Where the Dominant Provider fails to repair a Partial Private Circuit within the time limits set out in the table in paragraph 58 of this Direction it shall pay to the Third Party a fixed individual compensation payment as set out in paragraphs 61 to 65 inclusive of this Direction in respect of the period commencing on the expiry of the applicable repair time set out in the table in paragraph 58 and expiring at the time the Partial Private Circuit or Network Infrastructure is repaired.

61. Where the Third Party has ordered the Dominant Provider's Regular Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

62. Where the Third Party has ordered the Dominant Provider's Regular Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

63. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

64. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

65. The Dominant Provider shall not be liable to pay fixed individual compensation pursuant to paragraphs 62 and 64 of this Direction where it is also liable for fixed individual compensation pursuant to paragraphs 61 and 63 of this Direction where the Partial Private Circuit is being provided using the Network Infrastructure which is being repaired.

66. The Dominant Provider shall attend, and invite Third Parties to regular meetings to review the level of service provided by it in relation to Partial Private Circuits and related Network Infrastructure.

Change of speed or interface

67. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request, the ability to alter the speed or interface of a Partial Private Circuit.

68. The Dominant Provider shall ensure that it provides to a Third Party a Partial Private Circuit variant for the services to which paragraph 67 of this Direction applies, which are equivalent to the services it currently provides on a retail basis for retail leased lines.

STM-1, ISH and CSH handover

69. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request for a Synchronous Transfer Mode-1 ("STM-1"), an interface using an ISH link or CSH link; and handover pursuant to paragraph 70 of this Direction. Such link or handover shall be provided by way of network connecting apparatus capable of providing no more than the STM-1 capacity ordered by the Third Party.

70. The Dominant Provider shall within a reasonable period of a Third Party's written request, handover in a footway jointing chamber for Partial Private Circuits at a reasonable point nominated by the Third Party. The footway jointing chamber shall be located in the same Dominant Provider local serving exchange area as the Dominant Provider Serving Node to which the Partial Private Circuits being handed over are connected.

Equipment re-use

71. Paragraph 72 of this Direction shall only apply to the re-use of Plesiochronous Digital Hierarchy ("PDH") and Synchronous Digital Hierarchy ("SDH") equipment situated at a third party site ("Equipment").

72. The Dominant Provider may reject a request by a Third Party for re-use of PDH Equipment if such re-use would be incompatible with its network. Any such rejection by the Dominant Provider shall be made within 10 working days of a request by the Third Party and fully justified in writing to the requesting Third Party at the same time as the request is rejected.

Other Circuits

73. Unless Ofcom otherwise agrees, the Dominant Provider shall, offer to provide Partial Private Circuit with no single point of failure, within a reasonable period of a Third Party's request.

74. The Dominant Provider shall offer to provide, within a reasonable period of a Third Party's written request, a Partial Private Circuit which is dual pathed and diversely routed from a third party customer's premises to a Third Party's single Point of Connection.

General

75. The Dominant Provider shall implement this Direction within 10 working days of its publication.

76. This Direction shall take effect on the day it is published.

A handwritten signature in black ink that reads "Gareth Davies". The signature is written in a cursive, slightly slanted style.

Gareth Davies
Competition Policy Director, Ofcom

**A person duly authorised in accordance with paragraph 18 of the Schedule to the
Office of Communications Act 2002**

8 December 2008

Schedule 14

Direction under section 49 of the Communications Act 2003 and SMP Services Condition H1 imposed on British Telecommunications plc ('BT') as a result of the market power determinations made by the Office of Communications ('Ofcom') that BT has significant market power in the market for the provision of wholesale trunk segments at all bandwidths for the UK

WHEREAS:

- (A) As a result of a market analysis carried out by Ofcom, it determined on 8 December 2008, in accordance with sections 48 (1) and 80 of the Act, that the Dominant Provider has significant market power in the markets for the provision of wholesale trunk segments at all bandwidths for the UK;
- (B) In accordance with section 79 of the Act Ofcom set SMP Service Condition H1 which imposes various obligations on the Dominant Provider, *inter alia*, the obligation to comply with any Direction Ofcom may from time to time make under this Condition;
- (C) This Direction concerns matters to which Condition H1 relates;
- (D) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that, in accordance with section 49(2) of the Act, this Direction is:
 - (i) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
 - (ii) not such as to discriminate unduly against particular persons or against a particular description of persons;
 - (iii) proportionate to what it is intended to achieve; and
 - (iv) in relation to what it is intended to achieve, transparent;
- (E) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that it has acted in accordance with the relevant duties set out in sections 3 and 4 of the Act;
- (F) Ofcom has on 17 January 2008 published a notification of the proposed Direction in accordance with section 49 of the Act;
- (G) By virtue of section 49(9) of the Act, Ofcom may give effect to any proposals to give the Direction with or without modification, where
 - (i) it has considered every representation about the proposals duly made to OFCOM, within the time period specified in the Consultation Notification; and
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State; and
- (H) OFCOM received responses to the proposed Direction and has considered every such representation duly made to it in respect of the proposals; and the Secretary of State has not notified OFCOM of any international obligation of the United Kingdom for this purpose;

NOW, therefore, pursuant to Condition H1 Ofcom makes the following Direction:

Definitions

For the purpose of interpreting this Direction the following definitions shall apply:

“Act” means the Communications Act 2003;

“Dominant Provider” means British Telecommunications plc (‘BT’), whose registered company number is 1800000 and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by Section 736 of the Companies Act 1985 as amended by the Companies Act 1989;

“Hull Area” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;

“Point of Connection” means a point at which the Dominant Provider’s Electronic Communications Network and another person’s Electronic Communications Network are connected;

“Third Party” means a person providing a public Electronic Communications Service or a person providing a public Electronic Communications Network.

For the purpose of this Direction the following terms shall have the meaning as set out in the Dominant Provider’s Standard PPC Handover Agreement, as at the date of publication of this Direction, but with the necessary changes in order to ensure compliance with the Direction:

- Advance Capacity Order
- Advance Order Commitment
- BT Retail Private Circuit
- BT Serving Node
- Capacity Order
- Capacity Profile
- Customer Sited Handover (“CSH”)
- Forecast Profile
- In-Span Handover (“ISH”)
- Re-Designation
- Qualifying BT Retail Private Circuit

The following definitions shall also apply for the purpose of this Direction:

Term	Definition
Acceptance of Terms	Date on which a Third Party confirms acceptance of delivery conditions and is committed to the order.
Civil Works	Works that necessitate the digging up of a street for the installation of ducts.
Committed Delivery Date	The date confirmed by the Dominant Provider as the delivery date.
Firm Offer Confirmation ("FOC")	Confirmation by the Dominant Provider in writing (by fax or e-mail) to a Third Party of the delivery conditions including price and Committed Delivery Date, after acknowledging receipt of an order for a Partial Private Circuit or Network Infrastructure from a Third Party.
FOC Acceptance Interval	The number of working days from the FOC Date until the Acceptance of Terms.
FOC Date	The date on which the Dominant Provider makes a Firm Offer Confirmation.
FOC Receipt Interval	The number of working days from the Order Request Date until the FOC Date.
Installation Date	Date of installation of a Partial Private Circuit or Network Infrastructure.
Network Infrastructure	The categories of products listed in the table contained in paragraph 51 of this Direction.
Order Request Date	Date on which a Third Party dispatches a valid Partial Private Circuit order, or Network Infrastructure order, to the Dominant Provider.
Partial Private Circuit ("PPC")	A circuit provided pursuant to the PPC Contract and in accordance with the Directions.
PPC Contract	The Dominant Provider's Standard PPC Handover Agreement as at the date of publication of this Direction.
Provisioning Interval	The number of working days from the Order Request Date until the Installation Date.
Requisite Period	The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in

paragraphs 41 and 51 of this Direction.

Reduced Requisite Period

The period commencing on the Order Request Date and ending on the applicable working day as set out in the tables in paragraphs 44 and 54 of this Direction.

Subsequent Partial Private Circuit

A Partial Private Circuit which can be delivered on dedicated pre-provided Network Infrastructure where spare capacity exists.

Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them.

The Interpretation Act 1978 shall apply as if this Direction was an Act of Parliament.

Headings and titles shall be disregarded.

The Dominant Provider shall provide Partial Private Circuits and shall do so in accordance with this Direction.

Migration

1. The 12 month contractual minimum term placed upon a Third Party, for the provision of a Partial Private Circuit which has been migrated pursuant to the PPC Contract, shall be measured from the date that the original BT Retail Private Circuit was brought into service.

2. The Dominant Provider shall not impose any deadline before which a Third Party must inform the Dominant Provider that it requires a BT Retail Private Circuit to be migrated to an equivalent Partial Private Circuit status under the PPC Contract.

3. The Dominant Provider shall allow a BT Retail Private Circuit, which fell within paragraph 1.3 of the Phase 1 PPC Direction published on 14 June 2002, to be considered under the PPC Contract as a Qualifying BT Retail Private Circuit.

4. A circuit deemed to be a Qualifying BT Retail Private Circuit under paragraphs 20 or 21 of the Phase 2 PPC Direction published on 23 December 2002 shall continue to be a Qualifying BT Retail Private Circuit.

5. Where a Third Party was not previously eligible to migrate a BT Retail Private Circuit to a Qualifying BT Retail Private Circuit, but subsequently becomes eligible to do so, the Dominant Provider shall, for 60 working days following the date on which the Third Party's circuits become eligible for migration, allow migration without the Third Party incurring any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits.

6. Where, at the date of publication of this Direction, the Dominant Provider offers a BT Retail Private Circuit product and does not offer an equivalent Partial Private Circuit product, but subsequently offers to provide an equivalent Partial Private Circuit product, it shall allow a Third Party to migrate to the equivalent Partial Private Circuit product without it incurring any penalty (including any default or early termination charge) under its agreement with the Dominant Provider for the provision of BT Retail Private Circuits, for a period of 60 working days following the date on which the equivalent Partial Private Circuit product is first offered by the Dominant Provider.

7. Where the Dominant Provider has taken, or will take, longer than five working days from receiving a request from a Third Party to migrate a Qualifying BT Retail Private Circuit to a Partial Private Circuit, it shall give to the Third Party a refund as set out in paragraphs 8 and 9 of this Direction.

8. Where paragraph 7 of this Direction applies, the Dominant Provider shall refund to the Third Party a sum of money equal to the difference between:

- the charge levied by the Dominant Provider for the BT Retail Private Circuit to which the request for migration relates; and
- the charge levied by the Dominant Provider for the Partial Private Circuit to which the request for migration relates.

9. The refund set out in paragraph 8 of this Direction shall cover the period from the date the Dominant Provider receives the request to migrate until the date the Dominant Provider completes the migration.

10. The Dominant Provider shall, upon a Third Party's written request, provide to the Third Party a map of its network within the United Kingdom which clearly illustrates and labels the geographic location of each Dominant Provider tier 1, tier 1.5, tier 2, and tier 3 nodes.

Forecasts

11. The Dominant Provider shall only require a Third Party to provide a profile of future Partial Private Circuit capacity ordering intentions over a 12 month period, on a national aggregate basis for groupings of bandwidths no narrower than the following:

- less than 1 Mbit/s;
- 1 Mbit/s through to 2 Mbit/s;
- Above 8 Mbit/s through to 45 Mbit/s; and
- 155 Mbit/s.

12. The Dominant Provider shall allow a Third Party to set its Advance Capacity Order and Advance Order Commitment without any penalty by up to, 10% (by volume) below, or 20% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile for the period covered by the Advance Capacity Order or Advance Order Commitment.

13. The Dominant Provider shall allow a Third Party to revise periods covered by its previously stated Capacity Profile and Forecast Profile without any penalty by up to, 30% (by volume) below, or 30% (by volume) above, the amount stated in the Third Party's previous Capacity Profile or Forecast Profile, provided that paragraph 12 of this Direction does not apply.

14. In calculating any increase to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded up to the nearest integer.

15. In calculating any decrease to an Advance Capacity Order, Advance Order Commitment, Capacity Profile or Forecast Profile pursuant to paragraphs 12 and 13 of this Direction, the outcome of the revision shall, if not an integer, be rounded down to the nearest integer.

16. Where a Third Party places a Capacity Order at a Point of Connection for the period corresponding to that of the Advance Capacity Order, which total less than its Advance

Capacity Order for the Point of Connection, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}2,490$$

Where B is the total capacity provision by number of VC4-equivalent units specified in the relevant Advance Capacity Order in respect of each Point of Connection; and

Where C is the number of VC4-equivalents ordered during the period to which the relevant Advance Capacity Order relates in respect of each Point of Connection, but does not include cancellations of Capacity Orders made during or after the relevant Advanced Capacity Order period, but does include any Capacity Order cancelled as a result of the inability of the Dominant Provider to secure consents for CSH links.

17. Where a Third Party places orders for Partial Private Circuits below 1 Mbit for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for the Partial Private Circuits below 1 Mbit, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}52$$

Where B is the total Advance Order Commitment for Private Partial Circuits below 1 Mbit; and

Where C is the number of Partial Private Circuits below 1 Mbit ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of the Dominant Provider to secure consents for Partial Private Circuits.

18. Where a Third Party places orders for Partial Private Circuits from 1 Mbit through to 2 Mbit/s for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for Partial Private Circuits from 1 Mbit through to 2 Mbit/s, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}143$$

Where B is the total Advance Order Commitment for Private Partial Circuits from 1 Mbit through to 2 Mbit/s; and

Where C is the number of Partial Private Circuits from 1 Mbit through to 2 Mbit/s ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of Dominant Provider to secure consents for Partial Private Circuits.

19. Where a Third Party places orders for Partial Private Circuits from above 8 Mbit/s through to 45 Mbit/s for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for Partial Private Circuits from above 8 Mbit/s through to 45 Mbit/s, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}143$$

Where B is the total Advance Order Commitment for Private Partial Circuits of 155 Mbit/s; and

Where C is the number of Partial Private Circuits of 155 Mbit/s ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of Dominant Provider to secure consents for Partial Private Circuits.

19A. Where a Third Party places orders for Partial Private Circuits of 155 Mbit/s for the period corresponding to that of the Advanced Order Commitment, which total less than its Advance Order Commitment for Partial Private Circuits of 155 Mbit/s, the Dominant Provider may levy a charge no more than a sum equal to:

$$[(80\% \text{ of } B) - C] \times \text{£}3,788$$

Where B is the total Advance Order Commitment for Private Partial Circuits from above 8 Mbit/s through to 45 Mbit/s; and

Where C is the number of Partial Private Circuits from above 8 Mbit/s through to 45 Mbit/s ordered during the period to which the Advance Order Commitment relates, but does not include cancellations of orders for Partial Private Circuits made during or after the relevant Advanced Order Commitment period, but does include any order for a Partial Private Circuit cancelled as a result of the inability of Dominant Provider to secure consents for Partial Private Circuits.

20. In calculating (80% of B) in paragraphs 16 to 19A inclusive of this Direction the outcome shall, if not an integer, be rounded down to the nearest integer.

Service level agreements (SLAs)

General

21. The Dominant Provider shall set a Committed Delivery Date for each Partial Private Circuit or Network Infrastructure ordered from it by a Third Party and shall be required to provide reasons to justify a Committed Delivery Date which is set beyond the the relevant Requisite Period (RP) and that any extension of the Committed Delivery Date beyond the the relevant Requisite Period (RP) shall be made subject to the consent of the Third Party concerned whose consent shall not be unreasonably withheld.

22. For each Partial Private Circuit or Network Infrastructure ordered from the Dominant Provider by a Third Party, the Dominant Provider shall provide to a Third Party Firm Offer Confirmation in the manner set out in the definition section of this Direction.

23. The time scales and levels of fixed individual compensation payments to be payable under the service level agreement shall be those set out in paragraph 34 of this Direction, unless otherwise agreed between the Dominant Provider and a Third Party, or except to the extent that Ofcom otherwise consents.

24. Unless otherwise agreed between the Dominant Provider and a Third Party, any fixed individual compensation payment, or reimbursement pursuant to paragraph 28 of this

Direction, payable by the Dominant Provider to a Third Party pursuant to the Directions shall be offset by the Dominant Provider against the money owed to it by the Third Party, on a quarterly basis. The Dominant Provider shall keep complete and accurate records of the amounts it has offset in accordance with this paragraph. Such records shall be made available by the Dominant Provider following a request by a Third Party.

25. The Dominant Provider shall not be liable to pay fixed individual compensation payments pursuant to the Directions for periods of delay which arise due to circumstances beyond its reasonable control. The Dominant Provider shall notify a Third Party as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the Dominant Provider. Major construction works shall not be considered circumstances beyond the Dominant Provider's reasonable control.

26. The Dominant Provider shall ensure that any time limits set out in this Direction shall not apply to a Third Party to the extent that periods of delay arise due to circumstances beyond its reasonable control. The Third Party shall notify the Dominant Provider as soon as reasonably practicable when such circumstances arise. All contractors or sub-contractors of whatever level, and their respective employees, servants and agents, shall for the purpose of this paragraph be treated as employees of the relevant Third Party.

27. The Dominant Provider shall, at the reasonable request of a Third Party, postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure if such postponement is technically and organisationally reasonable. In agreeing to such a postponement the Dominant Provider shall only charge for reasonable additional expenses it has directly incurred as a result of the postponement.

28. The Dominant Provider shall only postpone the Committed Delivery Date of a Partial Private Circuit or Network Infrastructure with the written agreement of the Third Party. The Dominant Provider shall inform the Third Party as soon as reasonably possible of any proposed postponement of the Committed Delivery Date. Where such a postponement takes place the Dominant Provider shall reimburse the Third Party for any reasonable additional cost incurred by the Third Party as a direct result of the postponement.

29. The FOC Receipt Interval shall be a maximum of:

- five working days for Partial Private Circuits of less than 2 Mbit/s; and
- eight working days for Partial Private Circuits of 2 Mbit/s and above, and Network Infrastructure;

regardless of how many Partial Private Circuits are, or the amount of Network Infrastructure is, ordered at a particular site.

30. The Dominant Provider shall ensure that the FOC Acceptance Interval is a maximum of one working day for Partial Private Circuits of 2 Mbit/s or below and two working days for Network Infrastructure. Where a Third Party has not informed the Dominant Provider of its Acceptance of Terms or rejection of the order within five working days of the FOC Date, the Dominant Provider may cancel the Third Party's order.

31. The Dominant Provider shall keep complete and accurate records of the ordering, provision and repair of Partial Private Circuits and Network Infrastructure it provides to a Third Party.

32. Where any Partial Private Circuit or Network Infrastructure which is ordered by a Third Party is in excess of 110% (by volume), rounded up to the nearest integer where necessary,

of its Advance Order Commitment or Advance Capacity Order, the applicable Requisite Period set out in the tables in paragraphs 41 and 51 of this Direction shall be extended by 50% and rounded up to the nearest working day, where necessary, for the purposes of calculating fixed individual compensation payments.

Unliquidated damages

33. Nothing in the PPC Contract, as amended by the Direction, shall prevent a Third Party from bringing a claim against the Dominant Provider for unliquidated damages over and above the fixed individual compensation payments set out in the Direction.

Service level guarantees (SLGs)

Modifications to the PPC Contract

34. The Dominant Provider shall amend the terms and conditions which govern the supply of Partial Private Circuits set out in the PPC Contract to provide the following:

Compensation per event and value of compensation

- a) The Dominant Provider shall pay the Third Party compensation for each day or part day of delay in delivery of service beyond the Committed Delivery Date or the Third Party's Requirement Date (whichever is later).
- b) The Dominant Provider shall pay the Third Party compensation for each and every fault which has not been restored:
 - for Regular Care customers, in the first two days on a per day basis thereafter; and
 - for Enhanced Care customers, in the first five hours on a per hour basis thereafter.
- c) The compensation payable in event of the each late provision of the required Partial Private Circuit or Network Infrastructure service shall be set at 100% of one month's line rental (or Network Infrastructure rental) for every day or part day of delay beyond the Committed Delivery Date or Requirement Date (whichever is later), up to a maximum of 60 days.
- d) The compensation payable in the event of each late fault repair in relation to a Partial Private Circuit or Network Infrastructure shall be:
 - for Regular Care customers, 100% of one month's line rental for every fault which has not been restored in the first two days for every day thereafter until service is restored, up to a maximum of 30 days; and
 - for Enhanced Care customers, 15% of one month's line rental for every fault which has not been restored in the first five hours for every hour thereafter until service is restored, up to a maximum of 200 hours.
- e) Any limits on compensation payable as a result of a failure to satisfy the service guarantees shall be removed other than those set out in (c) and (d) above.

Additional losses

- f) Any compensation payable under the contract shall be without prejudice to any right of either party to claim for additional loss.

Proactive payments

g) The Dominant Provider shall monitor its performance against the service guarantees for fault repair and provision and compensate Third Parties proactively should it fail to satisfy the service guarantees. Compensation payments shall be made as soon as possible after the event and not later than the billing cycle following the billing cycle after the event unless not practicable. For the avoidance of doubt, compensation shall be payable without the need for a Third Party to make a claim.

35. The terms and conditions amended as set out in paragraph 34 above shall take effect from the 90th day after the publication of the Final Statement.

Partial Private Circuits

Quick quote and very high bandwidth quote on line

36. The Dominant Provider shall provide to a Third Party, upon written request, the necessary wholesale network and pricing information to enable the Third Party to obtain the same information for Partial Private Circuits that is available to the Dominant Provider's retail arm, for its "Quick Quote" quote facilities.

Concurrency of Partial Private Circuit and ISH link and CSH link delivery times

37. Where a Third Party has ordered a Partial Private Circuit, and the operation of the circuit requires the provision of an ISH link or CSH link, the Dominant Provider shall ensure that the delivery dates of the Partial Private Circuit and the CSH link or ISH link are the same.

Expedited orders

38. Upon a Third Party's written request, the Dominant Provider shall make reasonable endeavours to set a Committed Delivery Date for Partial Private Circuits within 50% of the relevant Requisite Period set out in the table in paragraph 41 of this Direction, rounded up to the nearest working day where necessary, for at least 15% (by volume) of a Third Party's previous month's order. The Third Party shall inform the Dominant Provider which particular Partial Private Circuits it shall endeavour to be expedited pursuant to this paragraph. This paragraph shall only apply to the delivery of Partial Private Circuits of 2 Mbit/s or less. This paragraph shall not apply to Partial Private Circuits which exceed 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment.

39. Paragraph 48 of this Direction does not apply to orders of Partial Private Circuits made pursuant to paragraph 38 of this Direction.

Time scales for fixed individual compensation

40. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 41 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

41. Where the Committed Delivery Date for Partial Private Circuits is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Bandwidth of Partial Private Circuit	Requisite Period
64 kbit/s	10 working days
128 kbit/s to 256 kbit/s delivered over copper	10 working days
128 kbit/s to 256 kbit/s delivered over fibre	30 working days
320 kbit/s to 960 kbit/s	30 working days
1 Mbit/s	30 working days
2 Mbit/s	30 working days
Subsequent Partial Private Circuit of 2 Mbit/s	10 working days
34 Mbit/s to 155 Mbit/s	57 working days
Above 155 Mbit/s	72 working days

Third Party's ability to cancel order

42. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 41 of this Direction, a Third Party shall be allowed to cancel its order for a Partial Private Circuit after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 41 of this Direction. The Requisite Periods in the table in paragraph 41 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of a Partial Private Circuit which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 41 of this Direction	Cancellation Threshold
10 working days or less	10 working days
11 to 20 working days	15 working days
21 to 40 working days	20 working days
41 to 60 working days	25 working days
Over 60 working days	30 working days

43. Where a Third Party cancels a Partial Private Circuit pursuant to paragraph 42 of this Direction, the Dominant Provider shall not charge the Third Party for the circuit and shall not charge for cancelling the circuit. The Dominant Provider shall also be liable to pay the Third Party any fixed individual compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite Periods for Partial Private Circuits

44. The Dominant Provider shall ensure that for at least 70% (by volume) of Partial Private Circuits of a particular bandwidth delivered by the Dominant Party to a Third Party within a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Bandwidth of Partial Private Circuit	Reduced Requisite Period
128 kbit/s to 256 kbit/s delivered over fibre	20 working days
320 kbit/s to 960 kbit/s	20 working days
1 Mbit/s	20 working days
2 Mbit/s	20 working days
34 Mbit/s to 155 Mbit/s	45 working days
Above 155 Mbit/s	50 working days

45. In calculating the 70% (by volume) of Partial Private Circuits to which paragraph 44 of this Direction applies the following shall not be included:

- Partial Private Circuits of 64 kbit/s;
- Partial Private Circuits of 128 kbit/s to 256 kbit/s delivered over copper;
- Subsequent Private Partial Circuits of 2Mbit/s;
- Partial Private Circuit orders to which paragraph 38 of this Direction applies; and
- Partial Private Circuits which exceed 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment.

46. The Reduced Requisite Periods set out in the table in paragraph 44 of this Direction apply only if, in the previous three month reporting period (such period not to be calculated on a rolling basis), a Third Party has ordered from the Dominant Provider:

- at least ten Partial Private Circuits of the same bandwidth where such Partial Private Circuits are 2 Mbit/s or less; or
- at least two Partial Private Circuits of the same bandwidth where such Partial Private Circuits are more than 2 Mbit/s.

47. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Order Commitment has been exceeded, the calculation shall be at a national level for each individual Partial Private Circuit bandwidth category and applied in the order in which the Partial Private Circuits were ordered by the Third Party.

Multiple orders

48. Where the Dominant Provider receives an order for more than 10 Partial Private Circuits at one site from a Third Party, the relevant Requisite Period applicable to determine whether the Dominant Provider shall pay fixed individual compensation as set out in paragraphs 40 and 41 of this Direction, shall be the relevant Requisite Period set out in the table in paragraph 41 of this Direction increased by a maximum of 50%. The Dominant Provider shall inform the Third Party of the revised time scales as soon as reasonably practicable.

Availability of service

49. When total loss of service (i.e. total loss of service for one minute or longer) occurs three or more times, within a 12 month period, to a Partial Private Circuit, the Third Party shall not be liable to the Dominant Provider for the monthly rental in any subsequent month where total loss of failure occurs to the Partial Private Circuit, until such time as 12 months have passed and the Partial Private Circuit has not suffered total loss of service. Occurrences of total loss of service which result in the Dominant Provider being liable to pay fixed individual compensation pursuant to paragraphs 60, 61 and 63 of this Direction, shall not be considered as an occurrence of a total loss of service for the purposes of this paragraph.

Network Infrastructure

Time scales for fixed individual compensation

50. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider later than the relevant Requisite Period (as set out in the table in paragraph 51 of this Direction) without the agreement of a Third Party, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

51. Where the Committed Delivery Date for Network Infrastructure is set by the Dominant Provider either, later than the relevant Requisite Period (as set out in the table below) but with the agreement of a Third Party, or within the Requisite Period, the Dominant Provider shall be liable to pay the Third Party a fixed individual compensation payment in accordance with paragraph 34 of this Direction.

Network Infrastructure	Requisite Period (where the Dominant Provider needs to carry out Civil Works)	Requisite Period (where the Dominant Provider does not need to carry out Civil Works)
ISH links	110 working days	85 working days
CSH links	110 working days	85 working days
ISH links – provision of new multiplexor on an existing Point of Connection	Not applicable	60 working days
ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	60 working Days
CSH links - provision of new multiplexor on existing Point of Connection	Not applicable	60 working Days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	25 working Days

Third Party's ability to cancel order

52. Where the Provisioning Interval exceeds the relevant Requisite Period set out in the table in paragraph 51 of this Direction, a Third Party shall be allowed to cancel its order for Network Infrastructure after the Cancellation Threshold (as set out in the table below) has expired. The Cancellation Threshold shall commence upon the expiry of the relevant Requisite Period set out in the table in paragraph 51 of this Direction. The Requisite periods in the table in paragraph 51 shall apply, for the purposes of this paragraph, regardless of whether there is a delay in delivery of Network Infrastructure which is due to circumstances beyond the Dominant Provider's reasonable control but not including delay by a Third Party.

Requisite Period set out in the table in paragraph 51 of this Direction	Cancellation Threshold
21 to 40 working days	20 working days
41 to 60 working days	25 working days
61 to 90 working days	30 working days
Over 90 working days	40 working days

53. Where a Third Party cancels Network Infrastructure pursuant to paragraph 52 of this Direction, the Dominant Provider shall not charge the Third Party for the Network Infrastructure and shall not charge for cancelling the Network Infrastructure. The Dominant Provider shall also be liable to pay the Third Party any fixed compensation payments accumulated pursuant to the PPC Contract as amended by the Directions.

Reduced Requisite periods for Network Infrastructure

54. The Dominant Provider shall ensure that for at least 70% (by volume) of the total VC4-equivalents of Network Infrastructure delivered by it to a Third Party during a three month period (such period not to be calculated on a rolling basis) the Committed Delivery Date is set within the relevant Reduced Requisite Period (as set out in the table below).

Network Infrastructure	Reduced Requisite Period (where the Dominant Provider needs to carry out Civil Works)	Reduced Requisite Period where the Dominant Provider does not need to carry out Civil Works)
ISH links	75 working days	60 working days
CSH links	75 working days	60 working days
ISH links - provision of new multiplexor on an existing Point of Connection	Not applicable	40 working days
ISH links - provision of extra STM-1 interface on existing STM-1 ISH SMA4 multiplexor	Not applicable	40 working days
CSH links - provision of		

new multiplexor on existing Point of Connection	Not applicable	40 working days
CSH links requiring only provision of new tributary card on existing multiplexor	Not applicable	20 working days

55. In calculating the 70% (by volume) of the total VC4-equivalents of Network Infrastructure to which paragraph 54 of this Direction applies the following shall not be included:

- Network Infrastructure which exceeds 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order.

56. The Reduced Requisite Periods set out in the table in paragraph 54 of this Direction only apply if, in the previous three month reporting period (such period not to be calculated on a rolling basis) a Third Party has ordered from the Dominant Provider at least 2 VC4-equivalents of Network Infrastructure. For the purposes of this paragraph the first reporting period of three months shall be the first such reporting period falling after 30 working days following the date of publication of this Direction.

57. For the purposes of this Direction, in determining whether 110% (by volume), rounded up to the nearest integer where necessary, of a Third Party's Advance Capacity Order has been exceeded, the calculation shall be made using VC4-equivalents at each Point of Connection applied in the order in which the Network Infrastructure was ordered by the Third Party.

Repair of Partial Private Circuits and Network Infrastructure

58. Where the Dominant Provider offers to a Third Party Regular Care and Enhanced Care for Partial Private Circuits and Network Infrastructure it shall do so at a cost orientated price and as set out in the table below:

	Operational hours	Repair/response time	Extras
Regular Care	Normal working hours	Response within one working day of receipt of a fault report by a Third Party. Repair within two working days of receipt of a fault report by a Third Party.	If a fault is not remedied within two working days of receipt of a fault report by a Third Party, the Dominant Provider shall call the Third Party to report progress being made to remedy the fault.
Enhanced Care	24 hours per day, 7 days per week (including public and bank holidays).	Response within four hours of receipt of a fault report from a Third Party. Repair within five hours of receipt of a fault report by a Third Party.	If a fault is not remedied within five hours of receipt of a fault report by a Third Party, the Dominant Provider shall contact the Third Party to report progress being made to remedy the

			fault.
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59. Receipt by the Dominant Provider from a Third Party of a report of a fault concerning a Partial Private Circuit or Network Infrastructure, shall be acknowledged by the Dominant Provider to the Third Party within one hour.

60. Where the Dominant Provider fails to repair a Partial Private Circuit within the time limits set out in the table in paragraph 58 of this Direction it shall pay to the Third Party a fixed individual compensation payment as set out in paragraphs 61 to 65 inclusive of this Direction in respect of the period commencing on the expiry of the applicable repair time set out in the table in paragraph 58 and expiring at the time the Partial Private Circuit or Network Infrastructure is repaired.

61. Where the Third Party has ordered the Dominant Provider's Regular Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

62. Where the Third Party has ordered the Dominant Provider's Regular Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

63. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Partial Private Circuits, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

64. Where the Third Party has ordered the Dominant Provider's Enhanced Care for Network Infrastructure, the Dominant Provider shall pay the Third Party an amount set in accordance with paragraph 34 of this Direction.

65. The Dominant Provider shall not be liable to pay fixed individual compensation pursuant to paragraphs 62 and 64 of this Direction where it is also liable for fixed individual compensation pursuant to paragraphs 61 and 63 of this Direction where the Partial Private Circuit is being provided using the Network Infrastructure which is being repaired.

66. The Dominant Provider shall attend, and invite Third Parties to regular meetings to review the level of service provided by it in relation to Partial Private Circuits and related Network Infrastructure.

Change of speed or interface

67. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request, the ability to alter the speed or interface of a Partial Private Circuit.

68. The Dominant Provider shall ensure that it provides to a Third Party a Partial Private Circuit variant for the services to which paragraph 67 of this Direction applies, which are equivalent to the services it currently provides on a retail basis for retail leased lines.

STM-1, ISH and CSH handover

69. The Dominant Provider shall offer to provide within a reasonable period of a Third Party's written request for a Synchronous Transfer Mode-1 ("STM-1"), an interface using an ISH link or CSH link; and handover pursuant to paragraph 70 of this Direction. Such link or handover shall be provided by way of network connecting apparatus capable of providing no more than the STM-1 capacity ordered by the Third Party.

70. The Dominant Provider shall within a reasonable period of a Third Party's written request, handover in a footway jointing chamber for Partial Private Circuits at a reasonable point nominated by the Third Party. The footway jointing chamber shall be located in the same Dominant Provider local serving exchange area as the Dominant Provider Serving Node to which the Partial Private Circuits being handed over are connected.

Equipment re-use

71. Paragraph 72 of this Direction shall only apply to the re-use of Plesiochronous Digital Hierarchy ("PDH") and Synchronous Digital Hierarchy ("SDH") equipment situated at a third party site ("Equipment").

72. The Dominant Provider may reject a request by a Third Party for re-use of PDH Equipment if such re-use would be incompatible with its network. Any such rejection by the Dominant Provider shall be made within 10 working days of a request by the Third Party and fully justified in writing to the requesting Third Party at the same time as the request is rejected.

Other Circuits

73. Unless Ofcom otherwise agrees, the Dominant Provider shall, offer to provide Partial Private Circuit with no single point of failure, within a reasonable period of a Third Party's request.

74. The Dominant Provider shall offer to provide, within a reasonable period of a Third Party's written request, a Partial Private Circuit which is dual pathed and diversely routed from a third party customer's premises to a Third Party's single Point of Connection.

General

75. The Dominant Provider shall implement this Direction within 10 working days of its publication.

76. This Direction shall take effect on the day it is published.



Gareth Davies
Competition Policy Director, Ofcom

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

8 December 2008

Schedule 15

Direction under section 49 of the Communications Act 2003 and SMP services condition HH1 imposed on British Telecommunications plc as a result of the market power determinations made by OFCOM that BT has significant market power in the UK market (excluding the Hull area) for alternative interface symmetric broadband origination at a bandwidth capacity up to and including one gigabit per second

WHEREAS:

- (A) As a result of a market analysis carried out by Ofcom, it determined on 8 December 2008, in accordance with sections 48 (1) and 80 of the Act, that the Dominant Provider has significant market power in the markets for the provision of wholesale alternative interface symmetric broadband origination at a bandwidth capacity up to and including one gigabit per second for the UK (excluding the Hull Area);
- (B) In accordance with section 79 of the Act Ofcom set SMP Service Condition HH1 which imposes various obligations on the Dominant Provider, *inter alia*, the obligation to comply with any Direction Ofcom may from time to time make under this Condition;
- (C) This Direction concerns matters to which Condition HH1 relates;
- (D) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that, in accordance with section 49(2) of the Act, this Direction is:
 - (i) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
 - (ii) not such as to discriminate unduly against particular persons or against a particular description of persons;
 - (iii) proportionate to what it is intended to achieve; and
 - (iv) in relation to what it is intended to achieve, transparent;
- (E) For the reasons set out in the explanatory statement accompanying this Direction, Ofcom is satisfied that it has acted in accordance with the relevant duties set out in sections 3 and 4 of the Act;
- (F) Ofcom has on 17 January 2008 published a notification of the proposed Direction in accordance with section 49 of the Act;
- (G) By virtue of section 49(9) of the Act, Ofcom may give effect to any proposals to give the Direction with or without modification, where
 - (i) it has considered every representation about the proposals duly made to OFCOM, within the time period specified in the Consultation Notification; and
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State; and
- (H) OFCOM received responses to the proposed Direction and has considered every such representation duly made to it in respect of the proposals; and the Secretary of State has not notified OFCOM of any international obligation of the United Kingdom for this purpose;

NOW, therefore, pursuant to Condition HH1 Ofcom makes the following Direction:

1. The Dominant Provider shall modify the service level agreements which govern the supply of backhaul extension services ('BES'), wholesale extension services ('WES') and wholesale end to end Ethernet services ('WEES'). In particular, the following contracts will require modification to reflect the requirements set out in the accompanying Annex to this Direction: (i) the Conditions for Backhaul Extensions Services; and (ii) the Conditions for Wholesale Extension Services.
2. For the purpose of interpreting this Direction, the following definitions shall apply:
 - (a) '**Act**' means the Communications Act 2003;
 - (b) '**Dominant Provider**' means British Telecommunications plc, whose registered company number is 1800000, and any British Telecommunications plc subsidiary or holding company, or any subsidiary of that holding company, all as defined by Section 736 of the Companies Act 1985 as amended by the Companies Act 1989;
 - (c) '**Transitional Provisions**' means sections 408 and 411 of the Act, Article 3(1) of the Communications Act 2003 (Commencement No. 1) Order 2003 and Article 3(2) of the Office of Communications 2002 (Commencement No. 3) and Communications Act 2003 (Commencement No. 2) Order 2003;
3. Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them in paragraph 2 above and otherwise any work or expression shall have the same meaning as it has in The Notification or, if the context so permits, in Schedule 1 thereto, as appropriate, and otherwise any word or expression shall have the same meaning as it has in the Act.
4. For the purpose of interpreting this Direction:
 - (a) headings and titles shall be disregarded; and
 - (b) the Interpretation Act 1978 shall apply as if this Direction were an Act of Parliament.
5. This Direction shall take effect on the day it is published and the Dominant Provider shall implement the changes set out herein within one month.
6. The Annex to this Direction shall form part of this Direction.



Gareth Davies
Competition Policy Director, Ofcom

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

8 December 2008

Annex

Proposed modifications to the Conditions for Backhaul Extension Services and the Conditions for Wholesale Extension Services

- 1) BT shall amend the terms and conditions which govern the supply of backhaul extension services ('BES'), wholesale extension services ('WES') and wholesale end to end Ethernet services ('WEES') set out in the Conditions for Backhaul Extensions Services and the Conditions for Wholesale Extension Services to provide the following:

Compensation per event and value of compensation

- a) The definition of Contractual Delivery Date ('CDD') shall be amended to require BT to provide reasons to justify a CDD which is set beyond the 57th day and that any extension of the CDD beyond the 57th shall be made subject to the consent of the Communications Provider concerned whose consent shall not be unreasonably withheld;
- b) BT shall pay the Communications Provider compensation for each day or part day of delay in delivery of service beyond the CDD or the Communications Provider's Requirement Date ('CRD') (whichever is later);
- c) BT shall pay the Communications Provider compensation for each and every fault which has not been restored in the first five hours on a per hour basis thereafter;
- d) The compensation payable in event of the each late provision of the required BES, WES or WEES service shall be set at 100% of one month's line rental for every day or part day of delay beyond the CDD or CRD (whichever is later);
- e) The compensation payable in the event of each late fault repair in relation to BES, WES and WEES shall be 15% of one month's line rental for every fault which has not been restored in the first five hours for every hour thereafter until service is restored;

Limitations on compensation- removal of caps

- f) Any limits on compensation payable as a result of a failure to satisfy the service guarantees shall be removed; and

Additional losses

- g) Any compensation payable under the contract shall be without prejudice to any right of either party to claim for additional loss.

Proactive payments

- h) BT shall monitor its performance against the service guarantees for fault repair and compensate Communications Providers proactively should it fail to satisfy the service guarantees. Compensation payments shall be made on a monthly basis. For the avoidance of doubt, compensation shall be payable without the need for a Communications Provider to make a claim.

Annex 9

Reassurance letters and voluntary undertakings

A9.1 In this Annex, we reproduce:

- the undertaking given to Ofcom by BT in relation to the supply and pricing of analogue and low bandwidth digital traditional interface retail leased lines; and
- the undertakings given to Ofcom by KCOM in relation to the pricing of KCOM's low, high and very high bandwidth 155 Mbit/s TISBOs.

A9.2 In addition, BT has agreed to provide a public reassurance that it has no plans to materially change the terms and conditions of its supply of PPCs at bandwidths of 34/45 Mbit/s and 155 Mbit/s in the CELA over the next six months.



20 November 2008

Stuart McIntosh
Competition Partner
Ofcom
Riverside House
2a Southwark Bridge Road
London
SE1 9HA

Dear Stuart,

Business Connectivity Market Review – BT voluntary commitments relating to i) the supply of new analogue and sub-2Mbit/s digital retail leased lines and ii) pricing for analogue retail leased lines

In the Business Connectivity Market Review consultation document published on 17 January 2008, Ofcom stated that it was minded to accept the following voluntary commitments from BT:

- BT will continue to supply new analogue retail circuits until 1 January 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying platform is closed at an earlier date;
- BT will continue to supply new sub-2Mbit/s retail circuits until 1 January 2011 or earlier if, subject to industry agreement and consent by Ofcom, the underlying wholesale products are withdrawn from new supply at an earlier date;
- BT will not increase its prices for analogue services more quickly than the rate of inflation (RPI-0%) for a period of two years following the publication of the Business Connectivity Market Review Statement i.e. from 2008 to 2010; and
- BT will commit to a further two-year-cap, the level of which would be agreed with Ofcom prior to 2011.

I would like to confirm, and invite Ofcom to accept, BT's offer of these voluntary commitments. We do so on the basis set out in the consultation document, namely that as a result of BT offering and Ofcom accepting the above voluntary commitments:

- (i) Ofcom will not impose SMP remedies on BT for the new supply of analogue retail circuits or sub-2Mbit/s retail circuits;

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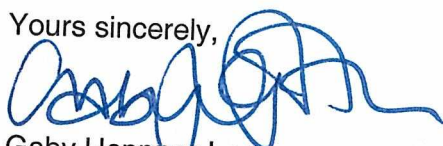
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- (ii) SMP condition I3 will only apply if BT fails to comply with commitments relating to the pricing of analogue retail circuits set out in these voluntary undertakings.

As these commitments are voluntary, BT reserves the right to vary or terminate them. For example, we might need to review the pricing commitments if we were required to adjust our leased line prices by a decision of a relevant tribunal or other authority. However, BT would undertake to discuss any variation or termination with Ofcom at least two months before it came into effect, and we would take into account any views Ofcom put forward. Once finalised, BT would provide written notice of the variation or termination to Ofcom.

Yours sincerely,



Gaby Heppner-Logan

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19th November 2008

Dear Gareth,

Further to my recent discussions with Serafino Abate with respect to the Business Connectivity Market Review, KCOM can make the following commitment with respect to the provision of services in the "Hull area":

KCOM commits not to increase prices for its low, high and very high bandwidth 155 Mbit/s TISBO products by more than "RPI+0%" for four years from the entering into force of the new regulatory framework for leased lines.

If you have any queries, please let me know.

Yours sincerely



Huw Saunders
Group Regulatory Affairs and Technology Development Director



Annex 10

Notification in relation to the market for high bandwidth AISBOs in the Hull area

NOTIFICATION UNDER SECTIONS 48 (2) AND 80 OF THE COMMUNICATIONS ACT 2003

Proposal to determine that no undertaking, individually or jointly with others, has significant market power in relation to the market for the provision of alternative interface symmetric broadband origination with a bandwidth capacity above one gigabit per second within the Hull Area under section 45 of the Communications Act 2003

- (H) The Office of Communications (“Ofcom”), in accordance with sections 48 (2) and 80 of the Communications Act 2003 (the “Act”) on 17 January 2008 published a notification stating its proposals for identifying markets, making market power determinations and the setting of SMP services conditions by reference to such determinations (“SMP Conditions”) as well as Directions under certain SMP Conditions, altogether referred to herein as “the January 2008 Notification”.
- (I) Further to the January 2008 Notification Ofcom hereby now, in accordance with sections 48 (2) and 80 of the Act, makes the following modified proposals for making market power determinations. These modified proposals complement the January 2008 Notification and are to be read in conjunction with it.
- (J) In its Notification under section 48 (1) of the Act dated 2 December 2008 in relation to the “Business Connectivity Market Review” (“the December 2008 BCMR Notification”) Ofcom identified, among others, the following market for the purpose carrying out a market analysis:-
- (a) the provision of alternative interface symmetric broadband origination with a bandwidth capacity above one gigabit per second within the Hull Area;
- but in accordance with section 79 (5) (a) of the Act did not make a market power determination for this market in the December 2008 BCMR Notification.
- (K) Ofcom in accordance with section 79 of the Act is now proposing to determine that no undertaking, individually or jointly with others, has significant market power in relation to the market referred to in paragraph 3 above, thereby modifying its proposal set out in paragraph 3 of the January 2008 Notification.
- (L) As a result, Ofcom is further proposing not to set any SMP services conditions in reference to a market power determination, thereby withdrawing its proposals set out in paragraph 4 on page 476 and Part 1 and 2 on pages 548 – 553 of the January 2008 Notification.
- (M) The effect of, and Ofcom’s reasons for making the proposals not to determine that any undertaking, individually or jointly with others, has significant market power in relation to the market set out in paragraph 3 above as set out in paragraph 4 above are contained in the explanatory statement accompanying this Notification.

- (N) In analysing the market referred to in paragraph 3 above, and in considering whether to make the proposals set out in this Notification, Ofcom has taken due account of all applicable guidelines and recommendations which have been issued or made by the European Commission in pursuance of a Community instrument, and relate to market identification and analysis, as required by section 79 of the Act.
- (O) In making the proposals referred to in this Notification Ofcom has considered and acted in accordance with the six Community requirements in section 4 of the Act.
- (P) Representations may be made to Ofcom about the proposals set out in this Notification and the accompanying explanatory statement by 13 January 2009.
- (Q) Copies of this Notification and the accompanying explanatory statement have been sent to the Secretary of State in accordance with sections 50(1)(a) and 81(1), the European Commission and to the regulatory authorities of every other Member State in accordance with sections 50(3) and 81(3) of the Act.
- (R) Save for the purposes of paragraph 3 of this Notification and except as otherwise defined in this Notification, words or expressions used shall have the same meaning as in the Act.
- (S) In this Notification:
- (a) **“Hull area”** means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc;
 - (b) **“KCOM”** means KCOM Group plc, whose registered company number is 2150618, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985, as amended by the Companies Act 1989; and
 - (c) **“United Kingdom”** has the meaning given to it in the Interpretation Act 1978 (1978 c 30).



Gareth Davies
Competition Policy Director, Ofcom

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

8 December 2008

Annex 11

Glossary

Alternative interface symmetric broadband origination (AISBO)

A form of symmetric broadband origination service providing symmetric capacity between two sites, generally using an Ethernet IEEE 802.3 interface

Asymmetric Digital Subscriber Line (ADSL)

A technology that allows the use of a copper line to send a high data rate in one direction and a lower data rate in the other

Asynchronous Transfer Mode (ATM)

A technology that enables data transfer asynchronously relative to its input into the communications system. The data is put into cells and transmitted through the network to be re-constructed at the output

Backhaul Extension Service (BES)

A wholesale Ethernet product that can be used to link one of BT's exchanges with a CP node in a communications network

Bandwidth

The physical characteristic of a telecommunications system that indicates the speed at which information can be transferred. In analogue systems, it is measured in cycles per second (Hertz) and in digital systems in bits per second (Bit/s)

Base-station Controller (BSC)

An element of a Mobile Telephone Network that controls a number of radio base-stations

Coarse Wave Division Multiplex (CWDM)

A transmission technology that enables up to 18 wavelengths of light to share the same fibre optic pair

Current Cost Accounting (CCA)

An accounting convention, where assets are valued and depreciated according to their current replacement cost whilst maintaining the operating or financial capital of the business entity.

Customer Sited Handover (CSH)

Interconnection occurs at a communications provider's premises.

Customer Premises Equipment (CPE)

Sometimes referred to as customer apparatus or consumer equipment, being equipment on consumers' premises which is not part of the public telecommunications network and which is directly or indirectly attached to it.

Dense Wave Division Multiplex (DWDM)

A transmission technology that enables up to 80 wavelengths of light to share the same fibre optic pair

Digital Local Exchange (DLE)

The telephone exchange to which customers are connected, usually via a concentrator

Digital Main Switching Unit (DMSU)

The main type of tandem switch, primarily used for conveying long distance calls. DMSUs form the backbone of the trunk network

Digital Subscriber Line (DSL)

A technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines

Electronic Communications Network (ECN)

A network that enables intercommunication between users of that network

Excess Construction Charge (ECC)

A charge levied where additional construction of duct and fibre or copper is required to provide service to a customer premise

Frame Relay

A packet switched data service providing for the interconnection of Local Area Networks and access to host computers at up to 2Mbit/s

Fully allocated cost (FAC)

An accounting approach under which all the costs of the company are distributed between its various products and services. The fully allocated cost of a product or service may therefore include some common costs that are not directly attributable to the service

Global Positioning System (GPS)

A system of providing accurate geographic position of a user

In Span Handover (ISH)

Interconnection occurring at a point between BT's premises and a communications provider's premises

kbit/s

kilobits per second. A measure of speed of transfer of digital information

LAN Extension Service (LES)

A communications service that enables the connection of two Local Area Networks together

Leased line

A permanently connected communications link between two premises dedicated to the customers' exclusive use

Local Area Network (LAN)

A network typically linking a number of computers together within a business premise enabling intercommunication between users and access to email, Internet and Intranet applications

Local Loop Unbundling (LLU) backhaul circuit

A circuit provided by BT that enables the connection of a communications provider's DSLAM to a communications provider's point of connection with BT's SDH network

Long Run Incremental Cost (LRIC)

The cost caused by the provision of a defined increment of output given that costs can, if necessary, be varied and that some level of output is already produced

Mobile switching Centre (MSC)

A component of a Mobile Telephone Network that switches voice calls between mobile users

Multi Protocol Label Switching (MPLS)

A technology that enables efficient routing of IP traffic over different systems

Multiple service Access Node (MSAN)

A device typically installed in a telephone exchange (although sometimes in a roadside cabinet) which connects customers' telephone lines to the core network, to provide telephony, ISDN and broadband all from a single platform

Mbit/s

Megabits per second, a measure of speed of transfer of digital information

Next Generation Network (NGN)

A Network utilising new technology such as Ethernet and IP to provide an array of services to end-users

Partial Private Circuit (PPC)

A generic term used to describe a category of private circuits that terminate at a point of connection between two communications providers' networks. It is therefore the provision of transparent transmission capacity between a customer's premises and a point of connection between the two communications providers' networks. It may also be termed a part leased line.

Passive Optical Network (PON)

A particular configuration of fibre-optic network that brings optical fibre cabling and signals all or most of the way to the end user

Plesiochronous Digital Hierarchy (PDH)

An older method of digital transmission used before SDH which requires each stream to be multiplexed or demultiplexed at each network layer and does not allow for the addition or removal of individual streams from larger assemblies.

Points of Connection (POC)

A point where one communications provider interconnects with another communications provider for the purposes of connecting their networks to 3rd party customers in order to provide services to those end customers

Public Switched Telephone Network (PSTN)

A telecommunications network providing voice telephony for the general public

Radio Base Station (RBS) backhaul circuit

A circuit provided by BT that connects a mobile communications provider's base-station to the mobile communications provider's mobile switching centre.

Service Level Agreement (SLA)

A contract between a network service provider and a customer that specifies, usually in measurable terms, what services the network service provider will furnish

Service Level Guarantee (SLG)

A statement of measurable aspects of a service connected with the Service Level Agreement

SSNIP

Small but Significant Non-transitory Increase in Price, usually considered to be 5 to 10 per cent, that is part of the hypothetical monopolist test used in market definition analysis

Stand Alone Cost (SAC)

An accounting approach under which the total cost incurred in providing a product is allocated to that product

Storage Area Network (SAN)

A high-speed special-purpose network that connects different kinds of data storage devices with associated data servers on behalf of a larger network of users

Synchronous Digital Hierarchy (SDH)

A method of digital transmission where transmission streams are packed in such a way to allow simple multiplexing and de-multiplexing and the addition or removal of individual streams from larger assemblies

Symmetric broadband origination (SBO)

A symmetric broadband origination service provides symmetric capacity from a customer's premises to an appropriate point of aggregation, generally referred to as a node, in the network hierarchy. In this context, a "customer" refers to any public electronic communications network provider or end user

Symmetric Digital Subscriber Line (SDSL)

A technology that allows the use of a copper line to send an equal quantity of data (e.g. a television picture) in both directions

Tier 1

A tier in BT's SDH network that denotes a network of nodes covering areas of high population. These nodes are connected by very high capacity line systems and denote the BT trunk network

Time Division Multiplex (TDM)

A method of putting multiple data streams in a single signal by separating the signal into many segments, each having a very short duration. Each individual data stream is reassembled at the receiving end based on the timing

TI symmetric broadband origination (TISBO)

A form of symmetric broadband origination service providing symmetric capacity from a customer's premises to an appropriate point of aggregation in the network hierarchy, using a CCITT G703 interface

Ultra Dense Wave Division Multiplex (UDWDM)

A transmission technology that enables up to 320 or more wavelengths of light to share the same fibre optic pair

Voice over IP (VoIP)

A generic term used to describe telephony services provided over IP networks

Virtual Private Network (VPN)

A network that uses a public telecommunication infrastructure, such as the Internet, to provide remote offices or individual users with secure access to their organisation's network

Wave Division Multiplex (WDM)

A transmission technology that enables multiple wavelengths of light to share the same fibre optic pair

Wholesale Extension Service (WES)

A wholesale Ethernet product that can be used to link a customer premise to a node in a communications network

Wide Area Network (WAN)

A geographically dispersed telecommunications network